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Aug. 1913.

28662

THE
JOURNAL OF HORTICULTURE,
COTTAGE GARDENER,
AND
HOME FARMER.

A CHRONICLE OF THE HOMESTEAD, POULTRY-YARD, APIARY, & DOVECOTE.

CONDUCTED BY

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VOLUME XXXVIII., NEW SERIES.
VOL. LXIII., OLD SERIES.

LONDON:
PUBLISHED FOR THE PROPRIETORS, 171, FLEET STREET.

1880.

LONDON :
PRINTED AT THE JOURNAL OF HORTICULTURE OFFICE,
171, FLEET STREET.

TO OUR READERS.

WE have little to say in this our sixty-second preface, except to record our acknowledgments of the valuable co-operation of all those who have aided us in maintaining the position of this Journal as a medium of usefulness. That it has been useful to many we have the best means of knowing, for we can say in all truth that during every week in the round of the season many letters reach us containing stronger expressions of approval than we can publish. It is sufficient for us to know that our object is attained, and it is meet that those who express their satisfaction should know, in return, that their approval is valued.

Having thus referred to the past and the present we must look to the future. Our object is to be still more useful, and our design is, if possible, to render our columns still more acceptable; and as it is easy—and too common—to promise more than can be fulfilled, we make no promises, preferring to be judged by results. Knowing the means at our disposal, relying on the continued support of old friends, and being assured of the aid of new, we shall hope and endeavour to more efficiently promote the cause of Horticulture and other worthy pursuits that contribute so powerfully to render homes happy, and which exert such a salutary influence on the general community.

THE EDITORS.

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WEEKLY CALENDAR.

Day of Month	Day of Week	JANUARY 1-7, 1880.	Average Temperature near London.			Sun Rises.		Sun Sets.		Moon Rises.		Moon Sets.		Moon's Age.	Clock after Sun.	Day of Year.
			Day.	Night.	Mean.	h.	m.	h.	m.	h.	m.	h.	m.			
1	TH		48.0	30.3	39.6	8	8	3	59	8	34	9	48	19	3 28	1
2	F	Dr. Royle died, 1858.	41.9	28.9	35.4	8	8	4	0	9	49	10	5	20	4 6	2
3	S		42.6	28.6	35.4	8	8	4	1	11	5	10	21	31	4 34	3
4	SUN	2ND SUNDAY AFTER CHRISTMAS.	43.3	27.3	34.4	8	8	4	2	morn.	10	37	22	5 1	4	4
5	M		41.4	26.6	34.8	8	8	4	3	0	24	10	44	6	5 39	5
6	TU		41.1	29.1	35.4	8	8	4	4	1	45	11	15	24	5 56	6
7	W	Zoological Society at 8.30 P.M.	41.7	30.1	35.5	8	7	4	6	3	10	11	43	25	6 22	7

From observations taken near London during forty-three years, the average day temperature of the week is 42.0°; and its night temperature 29.0°.

NEW YEAR'S DAY.

ON this day, by kind and suitable custom, we wish each other a Happy New Year. Little children that can just, and only just, speak, are "coached" like so many pupils for examination, into saying the few words, the mystic and expressive formula. Older relatives who, it may be, have lived, and loved, and met life's trials together, utter the words with a deeper meaning. Distant friends write them, and by a newer development friends far and near too send their new year's cards in such numbers that the overburdened postman learns to dread the day. But there is one thing to be considered—the words are spoken hopefully, cheerfully, and cheerily, or with a misgiving, just in proportion to the speaker's experience of the immediate past year. Had the year ended been a successful year, a prosperous, a truly happy year, the coming year is naturally rose-tinted; but if it has been quite the reverse, then a dark shadow seems to lie across its entrance. I fear this latter is the case with the year on which we this day enter; it has "one black shadow at its feet," the shadow thrown on it by its immediate predecessor.

Who can speak in ecstatic terms, or even in cheerful terms, of the year 1879? National troubles, wars and rumours of wars, terrible depression generally, and specially in all things relating to agriculture; and land is in all nations the very backbone of prosperity, and if the backbone be injured all is injured. Then, all gardeners have to do with land; it is that they cultivate, and as a rule the possessors of land have the largest and best gardens. The great landlords, as, for instance, the late Duke of Portland, are the grandest supporters of horticulture and the horticulturist. I think, therefore, that, considering all things, a tone of jolliness would be wholly unsuitable this New Year's day. I would further say, that from thousands of lips the words "A Happy New Year" will be uttered hesitatingly and barely hopefully, rather "it may be" than "it will be." Well, what are we to do? I would reply, If we can't be cheery we must, and can be, and ought to be sensible.

What can we do, then, under the present conditions of things in England, as sensible people of that Anglo-Saxon race which is never daunted for long, that always determines to find a way out of trouble, and find an aperture for light somewhere? If I glance to the north of Britain I see a race famous all the world over as gardeners, probably because they have more difficulties of climate to overcome; and if I glance to the west, to "our brilliant brethren in Ireland," as a great statesman recently called them, I know they have a liveliness which helps to pull through all trouble. Now

"For every evil under the sun
There's a remedy, or there's none.
If there is, be sure you find it;
If there is not, never mind it."

Let us, then, as sensible people try to find it. The evil just now is to work land with profit, and some appear to think that

this evil has reached land under the spade as well as under the plough. As a proof of this, a gentleman recently advertised for a gardener, and he had seventy applications for the vacant place, so many had been thrown out of employment by establishments being reduced from the shortness of money, owing to lower rents. Gardeners at this juncture, what do I advise you to do? I advise that you so cultivate your gardens with such pains, care, and economy, that they be not looked upon as luxuries, but things that are profitable. Let owners once learn upon reliable data that their gardens are a clear profit to them, the extra man in the stable may be dismissed, but not a man from the garden. It is calculated, I believe, that quite a third of the food is wasted in England, while a very small fraction indeed is wasted in France. The gardener and the cook are heavily responsible. Manage, then, in all things, gardeners, for your employers' interest; be economical, and be able to prove this, and if you can show that you make your gardens profitable a place will be kept instead of vacated. All classes must bear the burden equally. The oft-quoted words of wisdom written by Dean Swift were never more applicable in an enlarged sense than now, "He that makes two blades of grass grow where only one grew before is a true patriot." These are days when the energetic careful man will, and must from the necessity of the case, come to the front, and be thankfully cherished, while the easy-going careless man will meet with certain dismissal.

Then I would say, much more may be done than has been done with land near towns; yes, even small towns, in the way of market gardens. Smaller tradesmen as a rule have little gardens, the great mass of town folk none. Let these people know they can buy vegetables good and cheap; and mark you, cooking, economical cooking, is being better understood by all classes, and the value of vegetables as cheap and nourishing and health-conducting articles of diet each year is more known. Then what follows? All vegetables will, if carried to the door good and reasonable in price, be bought readily. We are learning the value of vegetables from the French. It ought no longer to be the fried ham and eggs of the artisan—most unwholesome and expensive food, yet commonly provided day after day in the manufacturing districts, and without an atom of vegetables; nor ought it to be only the bit of bacon and heavy pudding supper of the labourer. It is said jestingly that a Frenchman will make capital soup out of an old shoe and a Dandelion, but he no doubt will and does make good food out of what an Englishman throws away or might have for a trifle. I believe that little bits of land near towns hired at a high rent, and now being given up because corn is low, need not be given up, but might be cultivated with profit as market gardens. A quick active man with an industrious wife, and pleasant little salesmen and women in his children, could do better with his land as a garden than growing low-priced Wheat and lower-priced Barley. But quickness and energy are needed. I know a town round which land is being given up and farms falling vacant. A farmer near, who instead of quietly starving-down, sad and dispirited, finding that cheesemaking did not pay a formerly, started a suitable vehicle and sent his milk morn-

ing and night into the town, selling it by retail, and is doing well. Some thought of doing so, but while they thought about it he did it, and succeeds. Moral: Be quick to act, and act with judgment.

I preach up economy in gardening, but I also would preach up economy in the gardener, in his house, in his personal expenses. I notice that in spite of bad farming days markets are quite as much as ever thronged with farmers, and market days are spending days. Let us take warning; and hence as a last word on the subject I would say to all, You have less to spend, therefore your duty is to spend less in all things unnecessary.

Turn we now to more pleasant topics. At the very worst, country callings have much that is delightful in them; they are healthy and free from many troubles, and singularly attractive even to the highest placed among men. Thus we are told that Prince Bismarck is never so happy as when engaged in agricultural pursuits, and the Princess his wife is quoted as having told one of the great politicians that a root of Mangold Wurtzel interested her husband more than all the politics put together. The age to which those living in the country attain compared with those in towns prove the healthiness of their pursuits. If, together with health, profit can be reaped, the rewards would be indeed great.

I have spoken of vegetables being grown near towns with profit, the same may be said of fruits. When we consider that over two million pounds' worth of fruit, such as could be produced in this country, is now imported into it, there is surely room for improvement (that largest room in the world, by the way) in this respect as in vegetables.

It was an old adage that "he who plants Pears plants for his heirs." That is all moonshine now when on pyramid trees—not cut-back pyramid toys—you may have trees in fruit the second year, and the Apple crop is still more certain. In regard to Pears for profit, I would say only cultivate the early varieties, at least those ripening before November comes in, as these are more certain in yield and ripeness; and, this season excepted, our climate is a good one for what are most useful in vegetables, fruits, and flowers.

For those so situated as to be able to afford glass anything—nay, everything, may be done that heart can ask. This I will show from the following extract from a letter I received last May from an eminent fruit culturist. "I have," he writes, "almost grown grey amongst fruits, and still I go on with pleasure noting the results of the different seasons. I do not know what occult charm there is in fruit-growing, for it is certainly not sensual in my case, for beyond tasting the flavour I am not a fruit-eater; but then I should miss the production. I may say that not a single day passes here without fresh fruit, and in quantity enough to satisfy the wants of a family of eight healthy children. My Pears are now gone, but I have still plenty of dessert Apples, and for luxury I have a houseful of delicious Oranges which are picked and eaten as fancy dictates. My Grapes were finished on Easter Sunday; there was a daily supply since July of last year. My Peaches and Nectarines begin in May and last till October. Of the less luxurious fruits—Cherries, Plums, and Pears, the supply, no matter what the season, is over-abundant; this, of course, is owing to glass. My flower vases are filled now with glorious Roses. With heat and glass no person in this country need travel abroad for these luxuries, and they are luxuries, and are better here than in any country I have visited."

Such a delicious picture, so well drawn (word-painted), makes one's mouth water. Of course it is only comparatively few that can have all the appliances to produce such a result as above detailed. Still much can be done, from care in the small tradesman's small garden to the large spaces under horticultural production. Indeed I have seen as good fruit from a small garden at the back of a shop in a country town as ever I have beheld on the table at a mansion. The increased interest shown in all things horticultural is a good sign, not only for the advance of gardeners and for individual happiness, but for national prosperity. As Mr. Gladstone said, "Depend upon it, all these" (fruit, flowers, vegetables) "are capable of being made lucrative industries, and, pursued on a considerable scale, capable of yielding very large returns. Among signs of the growing interest on this question are the publications which are proceeding from the press" (e.g., *Journal of Horticulture*), "which shows the interest of the population of these kingdoms on subjects of this kind. It was a remarkable fact that in the town of Leeds more than a thousand children had actually competed for prizes for window gardening." So

speaks this eminent statesman whose business is to watch for the improvements of his country and to note them, especially if connected with matters of finance.

I was struck on a wet day last summer (alas, for these continuous wet days!), I was searching for any trace of the Tabard Inn in Southwark, mentioned by the poet Chaucer. I crossed London Bridge, and was amidst the throng in the busiest part of busy Southwark. I failed to find any trace of the Tabard for the best of reasons, for none now exist; but I did find a very old inn, the Old White Hart, of a somewhat similar character, and near there in a back yard I noticed a poor little girl very carefully tending her flowers grown in ancient-looking pots. Poor child! I longed to have her under the blue skies, and amid the meadows; but at any rate it was pleasant to see her cultivating her pretty taste, even under great difficulties of atmosphere, situation, and, I fear, poverty. But not alone the taste for flowers is cultivated under circumstances tending to depress, but where there is a strong turn of the mind it will be gratified. I noted this when travelling recently. There was a railway signal box just outside at the mouth of a tunnel, and above the tunnel a huge hill. The cutting at the tunnel's entrance was of course deep and sharp right down into the hill. Close to his signal box on the face of the hill, reached only by a long ladder, the railway *employee* had fixed a house for pigeons—not badly-bred ones either. A strange place for them, close to where the palpitating engines entered and issued, but the birds seemed to prosper in spite of the noisy disturbing whistle, and I doubt not cheered the solitary hours of the poor man.

But it is time to end my New Year's Homily. I have written somewhat sadly, depressed by the hard times seen on the faces of so many; but then these very times call for a brotherhood of feeling, for additional kindness in respect to alms where needed, and in respect of sympathy where they are not needed. We should try to help each, and do good and be good; and so far as in us lies try to make the new year a happy year.

"Courage and comfort! All shall yet go well."

With these words I end my sixteenth New Year's Address—
WILTSHIRE RECTOR.

NOTES ON VINE CULTURE IN WINTER.

MY remarks on this subject may be included under two heads—Vines at rest and Vines started into growth. The idea was common enough a few years ago that when the Vine had shed its leaves all its cultural requirements were ended until growth was about to begin again. In some cases this impression seems to be still considered as the right one; but all good Grape-growers are now most particular in their attention to their Vines when at rest in winter. In my opinion a good well-finished crop depends as much on the attention the Vine receives when at rest as when growing. First in importance is the cleaning of Vines. No Vines need be ever seriously injured by insects, because they can always be eradicated or at least severely checked under the winter treatment. According to the severity of the attack of insects during the past season must the cleaning be regulated. Where no insects have appeared a mere washing with water will be sufficient, but for scale, &c., more powerful means must be adopted. I have used paraffin oil for cleaning Vines and Peach trees, but I prefer turpentine in about the same proportion as the oil. Water heated to 140° will injure no ripened wood, and it is surprising the effect this has on all kinds of insects, especially scale. My plan now is to give the Vines a thorough syringing with hot water, then they are carefully washed with tepid water, to each gallon of which a wineglassful of turpentine and a piece of Gishurst compound about the size of a pigeon's egg have been added; after this the Vines are again syringed with hot water.

Some growers place the Vine rods outside the vinery in winter to expose them to frost; but this is no benefit in destroying insects, as I do not know any kind of Vine insect that frost will kill. Others, again, are anxious that their Vines should be subjected to as much cold as possible during the winter to insure "complete rest;" but this also is often carried too far, at least there is more importance attached to it than it deserves. My vineries are always full of plants in winter, and the Vines never receive more rest than that afforded by a temperature not lower than 35°. My opinion is that Vines at rest chiefly require attention on two points, one cleaning them thoroughly, the other watering the borders well. By

careful attention to these two important operations Vine culture in summer becomes an easy matter and good crops of fruit follow.

In my opinion many make a great mistake in starting their Vines in pots too early, and thereby increase expenditure and decrease the crop. All Vines must be in good condition to start readily into growth in November, and do well afterwards very early. Many Vines in pots started into growth before the new year only produce a few inferior bunches, when the same Vines if started in March or April would produce a fine crop. Similar remarks apply to old planted-out Vines; and where it is not absolutely necessary to have early Grapes I would advise all those not possessing first-class means of growing them to defer starting them into growth until as late in spring as possible. A high temperature is not the most desirable for winter Grape culture, but it should be as regular as circumstances will allow. A temperature of 60° will cause the Vines to grow fairly well, and this heat should be at command at all times. In many instances this heat could be easily maintained in mild weather, but when the temperature outside suddenly falls 10° or 15° a serious check is the result.

In any case to successfully force Vines in winter they must be in good health, and as vigorous as possible. This even applies to Vines started as late as January. Many Vines are started into growth at the beginning of the year, and in all cases the borders should be well supplied with water. The outside borders should also be well covered over with fermenting material. A good hotbed made with leaves and litter, and about 3 feet thick, is the best. A bed of this kind made now will retain the heat until March if it is firm and covered over with boards or tarpaulin. Differences of opinion exist as to the advantages of this practice, but I certainly think it is more beneficial than otherwise to cover the border. Sun heat is very beneficial to Vines in winter. On bright days very little air should be admitted, and no harm will be done if the temperature should rise to 80° or 90°. Little syringing is needed in the case of Vines growing or being started into growth at this time. A slightly dry atmosphere at night will be found better than a humid one, but at the same time moisture may be kept up during the day both by syringing the Vines in the morning and damping the surface of the border afterwards. In dull weather little damping is needed, and in severe weather, when hard firing has to be resorted to, more is required to prevent the atmosphere from becoming too dry.

It generally takes from five to six months from the time the Vines are started into growth until the fruit is ready. Vines started on Christmas or New Year's day should have fruit ready for cutting by the end of May or early in June, and those started about the 1st of February will not be much later in ripening, as we always think Vines make as much progress in March, April, and May as in January, February, March, and April.—A KITCHEN GARDENER.

DOUBLE DAISIES.

THERE is something especially English about Daisies and Primroses. Though both are found in the south of Europe, they cannot be so characteristic of early spring there as they are with us, or the ancient poets would have mentioned them amongst spring flowers; but of all the flowers—many of them very difficult to identify, of which the Greek and Latin poets have sung, there is not one that is thought to be either a Daisy or a Primrose. There is in fact no real Greek or Latin name for either. Probably everyone who has a garden thinks he can grow double Daisies, and is interested in their cultivation; and for this reason, perhaps, more people read what is written about double Daisies in this Journal than about rarer plants; but we often see them badly grown for want of attention to one or two rules.

I have not much to say about named varieties of double Daisies. The Belgian gardeners claim to be foremost in raising them; and from time to time we have advertisements of some new variety, whiter or redder or pinker or larger than any that has gone before. Far be it from me to disparage attempts to improve any flower, but I have often bought new varieties which I have been unable a year after to distinguish from my former stock of the same colour. I grow four distinct colours—white, red, pink, and the Victoria or Crown Daisy, with flowers of mixed red and white. The white is the strongest grower, the Crown Daisy the largest flower, but the same general rules of treatment apply to them all.

The rules for success are chiefly two: 1, to encourage the

abundant growth of short roots immediately under each crown; 2, to discourage that long-necked long-rooted habit by which the circulation between the roots and the leaves and flowers is stangled, and the latter stunted accordingly. To effect this we must first have plenty of plants to pull to pieces early, say by the middle of May. The Daisies in our flower beds will then be in their full beauty; and if we cannot spare any of them, we should keep a small surplus stock which will take very little room. Pull these into single crowns, pinching off the rootstock about a third of an inch below the crown. It is better to plant them without roots at all than to plant crowns with a neck more than half an inch long between them and the beginning of the root. They will soon make roots. Soil for Daisies can hardly be too strong if friable and not liable to cake hard, but it should be compact and close, and without stones or hard lumps: riddle the surface rather than leave these. If the ground has been fresh dug, press it down before planting, but have an inch or two of loose fine soil on the surface. Press the crowns well in, and sprinkle or sift a little fine light soil, such as leaf soil, amongst them. The leaves, though partly covered, will be able to breathe through this, and it assists the rooting. Till well rooted, water every day if there is no rain.

About August they should be transplanted. Several hundred may be transplanted in an hour; and it is well worth the trouble, as it makes the roots start again from the crown.

The simplest way to transplant is to cut horizontally 2 inches deep under the plants with a sharp spade or turfing iron, and lay the plants, a spadeful at a time, on another bed prepared as directed before: if you are short of room remove one spadeful width. Make the surface and replace them where they came from, but new soil helps to improve them. In any case press them well down, partly cover them with fine light soil as before, and water as occasion requires. If the crowns were planted in May 3 or 4 inches apart, by the middle of October they will have covered the surface: this is the best time for planting them in their flowering quarters. Undercut them as before; dig no hole where they are to be planted, but loosen the soil, lay them on the surface in clumps of any size you please, and press them down to the level of the bed. This spreads the roots and bends them upwards, and makes them commence growing all the sooner. Beware of making a hole with a stick and inserting the roots perpendicularly and squeezing them all together by lateral pressure: this will insure their being pushed out of the ground again by the first hard frost. The pressure in planting should be downwards, not against the sides of the plant. Partly cover the crowns and leaves with soil as before. If you observe afterwards any tendency to rise out of the ground go round and press them in again, pulling more soil over them; but if you plant early and attend to the above rules this is seldom required. If you wish to leave them where they flower for two years cut under them early in autumn, put some fine soil partly over them, and press them well down.

I omitted to mention a variety of double Daisies called *Ancubæfolia* with yellow veins in their leaves. This variegation is very common in the wild Daisy. Some gardeners admire it, but to me it has a sickly unhealthy look, and I have discarded it after growing it for several years.—C. W. DOD.

DIGGING AMONGST FRUIT TREES.

YOUR correspondent, "A KITCHEN GARDENER," writing on the above subject, page 443, says for several seasons he has not forked or dug the ground near the Raspberries, but spread the dung on the surface, and the crops had been excellent, and the same result was obtained from Apple and Pear trees which had not been disturbed for years; but on trees, to the roots of which manure had been applied and dug in annually, he had no fruit last season, and asks if any of your readers have observed the same result. Now I have not observed this with Apples and Pears. Last season there was scarcely any fruit on the trees mentioned in an orchard where the trees had not been disturbed for many years, and I may say the same of trees in the kitchen garden where the ground had been dug close to the trees. In 1878 the crops were abundant both in the kitchen garden and in the orchard. Raspberries where plenty of good manure was dug in annually only produced short weakly canes and few fruits; but last winter I gave them a good mulching with stable-yard manure and left it on the surface all the summer, and they yielded a most excellent crop, and have produced strong healthy canes, so that I expect

an equally good crop next year. In future I shall never dig the manure in, but spread it on the surface.

I quite agree with your correspondent in mulching over the roots of his fruit trees. I think it is better than digging in the manure, even if one should have to dig close to the trees.—G. HILTON.

COST OF EXHIBITING ROSES.

I HAVE been rather amused in reading the articles of "WYLD SAVAGE" and "DUCKWING" upon Rose-growing and Rose-showing. After duly comparing the two I must say that I think "WYLD SAVAGE" has the best of the argument. I cannot see that the estimate of "WYLD SAVAGE" is at all extravagant. Of course it could be done for less, as, for instance, a man who does the work entirely himself would make a great difference in the cost; but I take "WYLD SAVAGE" to be a gentleman animated by the true spirit of a rosarian. I agree with "WYLD SAVAGE" that the best blooms are generally produced from plants that have been moved the previous autumn, especially the early part of the Rose season; and will go further, for I know from experience that the plants moved in the spring will often produce superior blooms to those cut from maidens. I am afraid if amateurs depended entirely upon maiden plants we should not see them exhibited at any of the principal shows. Why? Because most of the plants would not bloom until August, and some even later.

There are different methods of planting Roses. Some when they receive their plants spoil them by pruning both branches and roots too closely, completely paralysing the plant, a weak growth following. If "DUCKWING" were to dip his plants in some "puddle" before planting and cut the roots sparingly I think he would have better success. When with Mr. Hedge of Reed Hall, Colchester, I made it a practice to plant a great many Roses annually, and from these I cut some of the finest blooms that carried off the leading prizes of the day. If it were not for the five thousand Roses planted out here in beds, &c., we should not be able to appear at the early shows.

As regards the cost of stocks, we pay 10s. per hundred for them, but then perhaps we are more particular in what we receive than "DUCKWING," but this would double that item in the expenditure. It may not be a mistake to apply manure at the time of planting, but they who depend on this alone as the means of procuring good blooms will be disappointed. Of course the price of manure varies according to locality, and special manures which are sometimes requisite are always costly. I think a little more attention in applying artificial manure at the proper time when plants are in a condition to receive it would yield grand results. I am a great advocate for disbudding as a means of producing the finest blooms but if you would see the Rose in its full beauty in the garden you must leave it entirely to Nature. There is no doubt much art in cutting, mounting, showing and carrying the blooms which only experience will teach. I have often been surprised at the improvement of the blooms as they pass from stage to stage from the plants to the exhibition tables. As regards "WYLD SAVAGE's" estimate of attending exhibitions, I think it is quite reasonable, and I am convinced that if we had more rosarians with the spirit of "WYLD SAVAGE" (who does not mind taking his gardener with him) we should see better exhibitions of this popular flower.—W. EASLEA, *Paul's Nurseries, Waltham Cross, N.*

ESTIMATES OF EARLY PEARS.

THE district of my experience relative to the undermentioned varieties is in the North Riding of Yorkshire, 541 feet above sea level and four miles from the coast. Soil a medium textured loam, inclining to be light, with a variable subsoil, chiefly gravel, but silt, sand, clay, and boulders of sandstone not uncommon.

Doyenné d'Été or Summer Doyenné, espalier, is the first in use; it is, however, not a July but an August Pear. The fruit has cracked considerably during the last two years, yet has been good seven years out of ten. The trees are on the Pear stock. We have not the Harvest Pear (Amiré Joannet). Petit Muscat succeeds admirably as a standard, but is in every way inferior to Early Bergamot, which succeeds as a standard, and this season was the best of the early Pears, being very juicy and pleasantly perfumed.

Of the "August Pears" which, however, ripen here in September, Jargonelle is by far the best of the older varieties, succeeding

equally well as a standard, pyramid, or against a wall on the Pear stock. It is, however, surpassed by Clapp's Favourite both in appearance and quality of fruit, the tree being on the Pear stock, and is favoured with a south-west aspect. This is one of the very best of summer Pears, with a buttery flesh and very agreeable aroma. Citron des Carmes is not reliable, as it invariably cracks. Beurré Giffard flowers so early that its blossom is invariably cut by spring frosts, and the fruit so soon goes mealy as to be worth little, indeed it has only given three crops in ten years. Beurré de l'Assomption does well on the Quince as a pyramid, and succeeds Jargonelle. Souvenir du Congrès is a shy bearer, but is very healthy on the Quince, and the fruit is excellent from a pyramid. Bloodgood does fairly well as a standard in a neighbour's garden, sometimes bearing enormously; it is growing in rather strong loam, and has a clay subsoil. Williams' Bon Chrétien does well as a pyramid on the Quince and bears good crops annually, last year being an exception, the crop failing. The fruit is gathered a few days before it is ripe, and in the fruit room ripens of very juicy and with a musky aroma, whereas those allowed to ripen on the trees are comparatively worthless. By gathering at intervals we have had it in season nearly a month. It has given seven full crops in ten years.

My summary of the early varieties is as follows:—Doyenné d'Été (Summer Doyenné) is our first, and when gathered as soon as indications of ripening set in it is juicy, but if allowed to ripen on the trees it is mealy and flavourless. Jargonelle follows, and keeps up the succession until Williams' Bon Chrétien comes in, the two last being everything that could be desired. Only a tree or two of Summer Doyenné is grown to give a few very early dishes. Clapp's Favourite is much more tempting fruit than Jargonelle, possessing all its good qualities with the addition of a musky aroma.—G. ABBEY.

As the one who suggested a Pear election, and felt some disappointment in its not taking place, permit me to say that having now read the articles in the two last Journals upon the subject of "Good Pears," I think that this Pear discussion is better than the proposed Pear election. I heartily, therefore, enter upon the subject, and hope all Pear-growers will endeavour to add their mite of information.

In regard to early Pears I place beyond any doubt, as far as my knowledge goes, not only in the first rank but first of all, Doyenné d'Été, or the Summer Doyenné, believing it to be in the words of Mr. Rivers "the best very early Pear." During the last two bad seasons I have had a heavy crop, while there was not a single fruit on Williams' Bon Chrétien; and Beurré d'Amanlis was equally unfruitful. Then the flavour is excellent; it is, too, a very juicy Pear and pleasant to the eye. Next I place Jargonelle, another never-failing cropper. Each of these Pears, if gathered, some one day some more five days after, may be made to be good for a considerable time. Also neither of these Pears is subject on my soil—a rather heavy loam on a sandy clay—to canker, as is the case with Williams' Bon Chrétien. An equally productive Pear here is Beurré Giffard, but to me of such an exceedingly unpleasant flavour that I never can eat a whole Pear, and certainly should uproot it as far as I am concerned. Dr. Hogg says it has "a highly aromatic flavour." Rivers says "a delicious noyeau flavour." I own I have tasted medical compounds far more pleasant to the palate. It also lacks juice as grown here.

I grow all my pyramids naturally, just cutting off a branch if it grows across another. Hence, instead of small close cones, I have large open trees which produce a good quantity of fruit. Nature is the best guide in all things, but as Nature is fallen so it wants correction. Branches will go across each other, hence it is necessary to interfere. Check but never crush Nature. Queen Anne might

"In trim gardens take her pleasure,"

but topiary work is unsightly and not remunerative. The idea of the necessity of hard pruning of Apple and pyramid Pear trees has unfortunately taken deep root in England, and I have to be very careful and imperative, or the gardener would, to use his own words, "let his knife into them."—WILTSHIRE RECTOR.

CHRYSANTHEMUM PROPAGATION.—All who possess a cold frame, and who may be desirous of having fine blooms of Chrysanthemums next autumn, should proceed at once to procure cuttings. Cuttings make much better plants than offsets. They should be 3 or 4 inches long, and inserted in

shallow boxes or 8-inch pots. They will be well rooted and ready for potting in two months. It is undesirable to use bottom heat, as a spindly growth is thus inevitable. Allow the cut surfaces an hour or two to heal to prevent damping or mildew. Sandy soil is preferable. They emit roots freely in ashes kept damp.—W. J. M.

GOOD PEARS.

AMONGST what may be termed September Pears the variety figured, Flemish Beauty, merits the attention of cultivators. It is attractive in appearance and generally excellent in quality. As some testimony of the value of this Pear we may

observe that it has no less than seventeen synonymes, and yet it is not by any means included in all collections. The fruit represented is rather small, but it will be recognised as a truthful portrait by those who grow the Pear, and those who do not may safely add it to their collections if their soil and district are suitable to Pear culture. But we shall shortly hear what others say about September Pears, and this variety will probably receive a share of attention. Like Williams' Bon Chrétien, Doyenne d'Été, and some others, Flemish Beauty must be gathered before it is ripe. It is then rich, buttery, and melting; but if left on the tree until fully ripe it is mealy and comparatively insipid. We have seen excellent crops produced by trees both on the Quince and Pear stocks grown

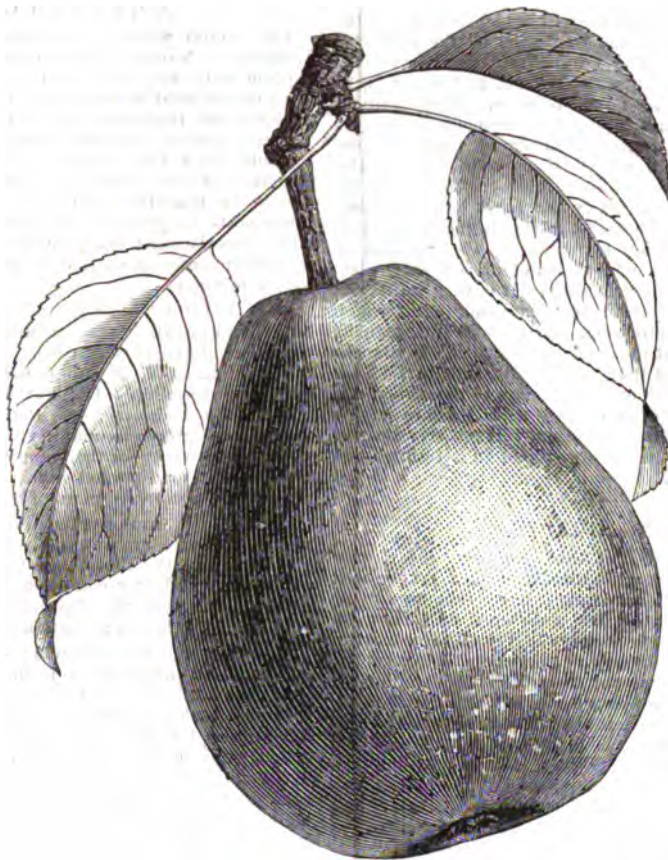


Fig. 1.—FLEMISH BEAUTY.

as espaliers and pyramids, also as wall trees, and in sheltered positions in the south it succeeds well as a standard. As is stated in the "Fruit Manual," Flemish Beauty was discovered by Van Mons in a village in Flanders in 1810.

HOW I GREW MY AURICULAS.

I HAVE read with great interest the various articles upon this flower, and I feel convinced that the modern system of culture will not bear comparison with that of bygone days; and although I have destroyed all my notes of fifty years' experience, I will endeavour from memory to give the results of my observations. It was either in 1810 or 1812 that, having saved a little money, I felt a desire to cultivate flowers, and I purchased from one of our most celebrated Lancashire Auricula growers about eighteen plants, which exhausted my funds, and having carried the plants home I began to consider how I was to winter them, as glass at that time could only be procured by those in affluent circumstances, and Auriculas were grown in frames covered with wooden doors or shutters. Even such shelter as this was not at my command, and having a summer house in the garden I placed a large flagstone in it elevated on bricks to a little more than 18 inches, and all open to the weather. This plan I was compelled to continue for some

years, and I can vouch that no Auriculas were kept more healthy and less subject to green fly.

A great mistake, in my opinion, has been made in treating Auriculas as only half-hardy. The plant grows on the Alps in a wild state; and the Dutch, who at an early period were the greatest cultivators of flowers, obtained a few plants, and by patient industry raised seed from which they obtained many new varieties. In the religious persecution, when the artisans of the Low Countries rather than change their religion emigrated to England, some who cultivated Tulips alone settled at Norwich, and introduced silk-weaving and a species of woollen called bombazine, and a small number of Tulip growers settled at Spitalfields, where for a long period all our finest and choicest silks were produced. Another colony (the Auricula growers) settled in Lancashire—Middleton and the neighbourhood—and they for more than a hundred years were almost the only growers in England. They raised many varieties, some of which are grown and esteemed at the present time. Grime's Privateer and Kenyon's Ringleader are in almost every collection. I have endeavoured to trace some of the Flemings, who were woollen manufacturers and the originators of the woollen cloth trade, which now has become of the highest importance to the counties of Lancashire and Yorkshire. Although I made much research I could only find

one with a Dutch name. He was called Heys, and there is an Auricula now in existence called Heys' Apollo.

Auriculas flourished in Middleton until within the last few years, but the atmosphere is so impure owing to the gases from chemical works and cotton factory steam engines, that there is only few now grown, and these of not a very healthy nature. Auriculas being natives of the Alps require an elevated position. All plants ought to be treated as they are found in their native habitats. On the Alps the soil chiefly consists of decayed vegetable matter.

I began to grow Auriculas under difficulties, and for years I only employed decayed turf from a rich pasture. The Middleton growers use very little if any loam in their compost. It is composed principally of well-decayed manure, a few rushes cut about half an inch long, and a little grit which is found in the neighbourhood washed from the sandstone of the district—all well mixed together. The finest Auriculas I have ever seen were at Mr. Charles Turner's, Slough, and the next at Mr. James Dickson's, Acre Lane, Brixton. They were as healthy as possible. The compost I recommend is decayed turf from a rich pasture, a small quantity of very old horse manure and cow dung, with a little sharp sand. I have also pounded coarse pieces of stone and bricks to mix with the soil when I had no sand. In early life I left home for some years, and my father grew Auriculas in my absence; and it is only a few years ago that I purchased the remains of the collection at his death, and as he employed only plain soil the plants were extremely healthy. It is very important that the plants have plenty of air, moderate supplies of water, and in spring a slight top-dressing. In autumn the green fly is a great pest, and the best mode of dealing with it is to make a paper collar and place it round the plant, and then take a large camel-hair pencil and brush them on to the paper, and by this means you will easily destroy them. There is also another pest—a grub which very often will entirely destroy the bloom-bud. I will continue the subject in a future issue. —JOHN SLATER, *Cheadle*.

PACKING GRAPES.

IN answer to "A YOUNG PACKER" on page 484, I may usefully detail a mode of packing the fruit that I have seen practised this autumn. The Grapes were sent to Covent Garden Market; they have to travel a distance of forty miles by rail, and the salesman speaks very highly of the condition in which they arrive, scarcely any of the bloom being rubbed off. From 10 to 15 cwt. are sent from the vineries annually. Cross-handle wicker baskets about 9 inches deep or so, holding from 10 to 15 lbs. of Grapes each, are found to answer the purpose better than boxes which have been tried. To fill the baskets they are placed on one end in a sloping position, then a lining of soft hay is put round the inside of the basket with a thin piece of paper to cover it. The Grapes are then put in, beginning at the lower end of the basket. Each bunch is placed in endways, of course only one bunch deep, till the basket is filled to the top, then it is taken from its sloping position and turned while in the hand the reverse way to which they were packed, which will be seen at once wedges the bunches tight together so that they cannot move in their transit; then a piece of paper is placed over the top of the Grapes, and covered with calico sewn tightly over the whole, which finishes the packing. The nett weight of the Grapes in each basket is plainly marked on the calico, so that should the fruit be interfered with in transit the salesman will know.—H. C.

IN the description of the garden at Rangemore in the *Journal of Horticulture* of January 20th, 1876, a very useful mode of packing Grapes is described. It is stated that the Grapes were sent by Mr. Bennett, the gardener, a distance of five hundred miles by railway, fifty by water, and twenty by land, and they invariably reached their destination in good condition. The Grapes are packed in stout glazed brown paper, each bunch forming a cone, and these cones of fruit are packed with base and apex interfitting in boxes, and the boxes are packed in dry leaves in hampers, so that injury by jolting and shaking is reduced to a minimum. The paper has a perfectly glazed and smooth surface, and is found to disfigure the Grapes less than any other kind of envelope. For sending short distances either very stout baskets or boxes may be employed, and the bunches need not be placed in paper. Place an inch or two of dry moss or paper shavings in the bottom of the receptacle, line the sides with moss or very soft hay covered with very smooth

paper, slant the box or basket, and place in the bunches with their points resting on the bottom and the stalks rising just above the top. Cut each bunch and place it in the box at once, not laying it down by the side of it to be removed again; pack as closely as possible, and fill-in any interstices with pieces of paper to make all secure, and press down the lid carefully bending down the stalks and all will be firm. If the work is well done the Grapes will travel well and will be less rubbed than if the bunches are wrapped in paper. Baskets or boxes holding 10 lbs. or 12 lbs. of Grapes are convenient for the purpose, and their depth must be in proportion to the length of the bunches.—PRACTICALIST.

NOTES AND GLEANINGS.

THE FROST which commenced in the neighbourhood of London on November 14th continued almost without interruption until the night of December 28th, when a decided thaw commenced, accompanied by rain and high winds. On Tuesday last, December 30th, a thunderstorm of considerable violence passed over the metropolis; hail and rain fell in torrents for a few minutes, and the wind blew a hurricane. The rush of wind down the Thames was so great that many people on Blackfriars Bridge clung to the balustrade and lamp posts to prevent being driven off the pavement. The storm was the most severe in the south of London, and a correspondent informs us that at Brixton 1½ inch of hail fell in fifteen minutes.

—A CORRESPONDENT informs us that the POINSETTIA AT HAWKSTONE PARK, SHREWSBURY, are in magnificent condition at the present time. The plants are from 12 to 18 inches high, in 4, 5, and 6-inch pots, and their bracts are not only exceedingly brilliant in colour, but some of them measure 18 inches across. Both the single and the double varieties are grown in quantity. Mr. Pratt is most successful with the cultivation of the Poinsettia, and the plants in question reflect great credit upon him. It is undoubtedly one of the most useful decorative plants for the winter we possess.

—IN the same garden the CALANTHES Veitchii vestita, and vestita lutea are extremely fine, the bulbs being of a very large size and the flowers most abundant. Seldom are these plants seen in better condition, and they produce a fine effect as arranged with the Poinsettias and Zonal Pelargoniums, which are also bright and attractive.

—WE cite the following opportune notice relative to SOWING WRINKLED PEAS from Messrs. James Veitch & Sons' new seed catalogue:—"In consequence of the past unfavourable season Peas, more especially the late wrinkled varieties, have suffered to a great extent, and some sorts have entirely failed, while stocks of some others of this class are very limited. We would advise that wrinkled Peas should not be sown very early in the season, as, being badly harvested, they are not well ripened; and, although they grow perfectly well now under advantageous circumstances, they may partially fail if the ground is cold and spring unfavourable."

—A CORRESPONDENT, who highly recommends BEGONIA MOONLIGHT, states that it commences to flower very early in the year and continues until the present time. The clusters of flowers are freely produced, while the individual flowers are of fair size and almost pure white internally, and slightly blushed outside, of good consistency, consequently lasting well in a cut state; the foliage is beautifully marbled and dark coloured, which is a good contrast to the large and freely produced flower clusters. The charming B. Frobellii with its brilliant scarlet flowers is also very valuable for decoration during the dull autumn months.

—MR. BARDNEY writes as follows relative to LATE GRAPES:—"At Norris Green they are keeping better than we anticipated earlier in the season, when the weather for properly ripening them was so unfavourable and the season so late. The Vines were allowed ample time to mature their fruit without hurrying them in any stage, and were consequently subjected to abundance of air, to which we attribute their keeping properties. We started the Vines into growth earlier in the season than is generally done with late vineries. We consider it would be well for cultivators who want to keep their Grapes for some time after being ripe not to allow the Vines to come on gradually of their own accord, but to use a little fire heat in the spring and less in the latter stages of growth. If this prove of no advantage in good years growers would be on the safe side during unfavourable seasons."

— **MESSES. LETTS & CO.**, whose excellent Diaries we referred to last week, have issued a small **WEATHER ALMANACK**, the author being Captain Saxby, B.N., who is well known as having devoted special attention to weather forecasts, and whose predictions have often proved correct. "What the public really want," says the author of this miniature almanac, "is a system by which one may, on turning to a monthly page of some almanack, gather at a glance sound and reliable information as to coming weather weeks and months beforehand," and this want he has endeavoured to supply. Captain Saxby's system of foretelling storms is founded on the disturbing force exerted by the moon on the fluids on the earth's surface, and the case is put thus—"No sane man doubts that it is the moon's action which mainly governs the tides; and if the moon's influence affects the waters of the ocean, why should it not disturb the waters of the clouds and the air in which they float? Both are ponderable bodies, which equally obey the laws of gravitation." Stormy days are designated by black type in the calendar, and gardeners and others interested in the subject might well possess this concise little annual, and test the accuracy of the prognostications for themselves.

— A CORRESPONDENT describes **NARCISSUS PAPTRACÆUS** as one of the loveliest of the forced plants that have yet come into flower. It is largely used in Covent Garden for bouquets and "buttonholes," and not the least recommendation is its charming and delicate perfume, besides which its glistening white colour is most attractive. Among a large number of bulbs this has been the first species in bloom.

— **MR. BRUCE FINDLAY**, Curator of the Manchester Botanic Garden, has issued a small pamphlet entitled "**HORTICULTURAL PURSUITS**," the object of which is to demonstrate the physical and pecuniary advantages attendant on intelligent cultivation of the land. It is written in a free and popular manner, and the moderate price—viz., a penny, places it within reach of those for whom it is chiefly intended. Mr. John Hoggwood is the publisher.

— **MR. H. G. BOHN** of Henrietta Street, Covent Garden, has re-issued GORDON'S "**PINEFUM**" with considerable improvements. These have been made by Mr. Bohn himself, whose literary and linguistic attainments, and a good knowledge of the Coniferae, qualify him for the work. The popular names of all the species are given in English and every language in which they are known to occur, and a very valuable addition is the references to plates in the works where the different species have been represented. All of these works are both rare and expensive, and not within the reach of many people; but they can be consulted in most scientific and national libraries, and a reference to them such as Mr. Bohn has supplied is a most important addition to the work.

— **MR. ALLIS**, writing to us on the **WEATHER NEAR BIGGLESWADE**, observes:—"At 5 P.M. on the 27th inst. there was every appearance of a severe frost, but before 10 P.M. a sudden and rapid thaw set in, and in less than twelve hours the mercury of the thermometer had risen 20°, and during the greater part of the following day the mercury stood at 51°. Much damage has been done to vegetable crops. Nearly all kinds of Broccoli are killed, also old stools of Cabbages, which give off a very offensive smell. Shrubs, with few exceptions, have escaped fairly well; Laurustinuses, Euonymus, and Aucubas have suffered most where growing in sheltered situations, the wood not being ripened. Nearly all kinds of outdoor work has been resumed."

— ONE of the very many peculiarities of this singular year is, writes our Clonmel correspondent, **PEACH TREE FOLIAGE AT CHRISTMAS**. In looking over the Peach walls at Minella House on Christmas eve he was much surprised to find the leaves firmly adhering not only to the new but to the old wood. This does not refer to young, or untrained, or recently planted trees that bore indifferent or no crops. On the contrary, the crops borne for several years have been admitted by visitors to be second to none in Ireland. Even 16° of frost has not caused the leaves to fall. Mr. Luckhurst also informs us that the Peach trees under his charge in Sussex still retain most of their foliage, and present a "singular appearance."

— FOR the four weeks ending Saturday, December 20th, the **WEATHER** at **Kearney Abbey, Dover**, has been exceptionally severe. From observations taken in the open, 5 feet from ground, Mr. Maxted, the gardener, finds an average of 9° of frost. On December 7th, 27° of frost was registered. Average

day temperature 34°. Some of the coldest days occurred with a S. or S.E. wind.

— We learn that the Academy of Sciences in Turin has recently awarded a prize of 12,000 lire (about £475 English) to **MR. CHARLES DARWIN** for his discoveries in the physiology of plants.

— **THE LIVERPOOL HORTICULTURAL ASSOCIATION** held its monthly meeting on December 30th, when **W. B. Halhead, Esq.**, Honorary Treasurer, read a very instructive paper on "**Botanical Terms**." The subject was rendered more interesting by the extra pains taken by Mr. Halhead to explain every term carefully and simply, by having scraps of plants and flowers of the different classes brought to notice. Mr. Halhead also proposed the study of botany to be introduced in connection with the Association, and examinations held for gardeners, and prizes given to those that make the most satisfactory progress in the study. Further, he promised to render every assistance he could, and volunteered to give lessons to any of the members of the Association. **Mr. William Bromily, Oaklands, Aigburth**, also read a paper on the cultivation of the **Bouvardia**. The paper was a good one, and such that might have been expected from such an excellent cultivator of the **Bouvardia**.

— A MEETING of the **EDINBURGH BOTANICAL SOCIETY** was held on the 11th inst., **Mr. William Gorrie** of **Rail Lodge** occupying the chair. Mr. Gorrie was elected President, and Professor I. Bayley Balfour and Dr. T. A. G. Balfour Vice-Presidents. Sir Robert Christison, Bart., Professor Thomas R. Fraser, Professor Douglas MacLagan, and Mr. John Sadler (Curator of the Royal Botanic Gardens) were added to the Council. The other office-bearers were chosen as follows:—Honorary Secretary, Professor Balfour; Honorary Curator, the Professor of Botany; Foreign Secretary, Professor Dickson; Treasurer, Mr. Patrick Neill Fraser; Assistant-Secretary, Mr. Andrew Taylor. Testimony was borne by several of the members to the valuable services which Mr. Sadler had rendered to the Society during his tenure of office, and a committee was appointed with a view to recognise these in a more tangible form. After papers had been communicated "On the Septa across the ducts in *Bougainvillea glabra* and *Testudinaria elephantipes*," by Professor Alex. Dickson; "On the Growth of the New Zealand Flax Plant (*Phormium tenax*) in Orkney Islands," by Dr. Wm. Traill; and "On the Rhea fibre trials at Saharunpore," by Mr. William Bell in a letter to Dr. Balfour, Mr. Sadler read his monthly report on "The Open-air Vegetation at the Royal Botanic Garden," from which it appeared that during November the thermometer was at or below 32° on seventeen mornings. The three lowest temperatures during the month were on the 14th, 29th, and 30th, when 12°, 14° and 13° were respectively registered. There were 92° of frost registered during the month, as compared with 42° in November, 1878. Last year the winter (which would be a long-remembered one) set in on the 29th November, while this year it commenced on the 22nd November. Since this month (December) began we had experienced continuous hard frost, and had already registered 168°, whereas at the same date of last year there were only 50° registered. The following had been the readings up to the date of the meeting: 1st December, 23°; 2nd, 21°; 3rd, 4°; 4th, 1°; 5th, 19°; 6th, 21°; 7th, 17°; 8th, 15°; 9th, 21°; 10th, 22°; and 11th, 20°. The frost of the 3rd and 4th would, he feared, tell severely on vegetation, but it would be some time yet before they would see the full extent of the injury done. Mr. Dunn, Dalkeith Palace, having referred to the excessive severity of the frost on the 3rd and 4th inst., Mr. Buchan mentioned that the readings of the thermometer on these dates were the lowest authenticated in Scotland since 1860. The Chairman afterwards read a paper entitled, "Notes of New Zealand Plants that Withstood the Severe Winter of 1878-79."

DOMBEYA BURGESSIÆ.

SEVERAL species of *Dombeya* are well known in gardens, and deservedly admired for their delicate beauty; but the one under consideration is of comparatively recent introduction, and, although undoubtedly superior to its relatives in a decorative point of view, it is unknown to the majority of gardeners. It was first described by Dr. Harvey in his "*Flora Capensis*," accompanied by a figure of the tree; an accurate representation also subsequently appeared in the "*Botanical Magazine*." Mr.

J. McKen discovered it in Zululand nearly twenty years ago, and Mr. W. J. Gerrard also found it in Natal.

Although Dr. Harvey described this species as a tree or shrub which attains a height of 8 to 10 feet, it appears likely to exceed these dimensions, judging from the specimens at Kew. The leaves are bright green, pubescent, and from 6 to 9 inches long, the large corymbose clusters of flowers rising from their axils. The flowers are large, with spreading white petals marked at their bases with a pleasing bright rosy tint which

also extends up the veins into the centre. The peduncles rise well above the foliage, and enable the chaste delicacy of the flowers to be seen to the best advantage. The time of year, too, at which the flowers are produced is also a point in its favour of considerable importance. In the early part of December we observed a specimen in the Palm stove at Kew in full beauty, and its attractiveness was greatly enhanced by the dullness of the season and the scarcity of flowering plants. By careful management and a succession of plants it might be



Fig. 2.—*DOMBEYA BURGESSIE*.

had in flower from August until Christmas, and would prove of great value for the decoration of a stove or intermediate house. Its cultural requirements are few, a soil of good sandy loam and peat, thorough drainage, and abundance of water when growing being the chief points to attend to.—L. C.

HOW OUR PEACH TREES ARE PRUNED.

THE cold weather caused the ripened foliage to fall off the trees in our late Peach house, and we are now examining them and arranging the shoots. The last of the fruit was gathered about the end of October, and we had to increase the fire heat in order to ripen the wood.

Pruning a Peach tree used to appear to me as one of the highest achievements of the gardener's art. The course of years has, however, resolved it into an ordinary attainment.

The weaker growths are merely thinned out, also any that may have become barren of buds. These shoots are always cut back to a stronger and healthier growth. The ends of the shoots are not cut back, as it has been found to be not only unnecessary but adverse to the well-being of the trees. There may be some who will immediately conclude that such a careless method of pruning will give as its results a tree of bare stems, but such is not the case, as our trees are well covered with bearing wood. Another unorthodox habit I have followed with the best results is refraining from using any "winter dressing" for painting the trees. If the weather be mild a washing with soapy water very hot may be applied, but under present circumstances that must be dispensed with. The soil requires no addition, so that the above is our winter dressing of Peaches in detail. Unfortunately the soil is not one that is conducive to longevity in the Peach. At a future day there

will be something to add to these remarks, which it is desired may have the effect of simplifying Peach culture.—R. P. BROTHERSTON.

UTRICULARIA ENDRESII.

AMONG the numerous handsome novelties which characterise Messrs. Veitch's collections at the chief horticultural exhibitions, few during the past year were more attractive, or more gene-

rally admired than the one represented in the annexed engraving. *Utricularia montana* is now widely grown, not only for its beauty but its interesting carnivorous propensities, and *U. Endresii* forms in every respect an admirable companion for that species. It succeeds under precisely the same treatment, being especially adapted for culture in baskets in a compost of peat and sphagnum moss, and when the basket is suspended from the roof of a stove or Orchid house, and the plants are bearing their numerous racemes of flowers, they are extremely



Fig. 3.—*UTRICULARIA ENDRESII*.

beautiful. The flowers are even more delicate and pretty than those of *U. montana*, the bright yellow palate being relieved by the light mauve tint of the upper lip and the creamy white lower lip, and the slight nodding tendency of the flower stems imparts a very graceful appearance to the plant. The flowers are also of great value for bouquets and vases. At one of the meetings of the Royal Horticultural Society in 1876 a first-class certificate was deservedly awarded to Messrs. Veitch for this plant, who received it from the late M. Endres. It is a native of Costa Rica.

THE FROST AND DECIDUOUS TREES.

THERE seems to have been one peculiarity in the recent severe weather—namely, the great difference in the amount of

frost in various parts of England and Scotland. The thermometer here registered 28° of frost on the morning of the 7th inst. This was corroborated by thermometers a mile east and a mile north, and was the greatest degree of frost in the year here. But at Cambridge and at York there were 4°, and at Nottingham 6° more. In Scotland we are informed that the thermometer fell in one instance 13° and in another 23° below zero! We should hope that this reading was not over a very extended district, or the destruction of vegetable life must be fearful. We remember English Oaks splitting with a loud report from the effects of frost during the winter of 1860–61, when the greatest amount of cold in this district was 5° below zero. There is one remarkable phenomenon here—namely, a great part of the young deciduous trees and shrubs retained their leaves throughout the autumn, and still retain

them. The enclosed branches of Hybrid Perpetual and Tea-scented Roses cut from the open ground are sent to verify this fact. It would be interesting and useful to learn if this is general or only local. If general, much will doubtless be saved in that way which otherwise would have been lost.

Since writing the above I have received letters from France. In Burgundy and round Paris the thermometer has sunk 20° to 25° below zero. One correspondent, writing on the 24th of December, says, "The thermometer now stands at zero, and the losses of out-of-door plants will be deplorable." Another, writing two days later from Paris, says, "We have here a terribly severe winter. I believe that all our standard Roses, both plants and in bud, are killed, so that we shall have no standard Roses for two years." And yet another reaches me while writing—"In France we have lost most of our evergreens, as Laurels and Aucubas, standard Roses, Magnolias, and many Conifers. Most of the Rhododendrons are black. We never had in France such a terribly severe winter. All nurseries have lost much, and some nearly all."—WILLIAM PAUL, *Paul's Nurseries, Waltham Cross, N.*

[The branches received have every leaf as firmly adhering to them as in summer. It is probable that owing to the lateness of the season the leaves had not become fully matured, and the functions continued to be exercised unimpaired beyond the usual period. This amplitude of foliage must have afforded material protection to the trees; but it is impossible at present to tell what the effect of the severe frost may have had on the young wood when full of sap and in a state of growth, and we shall look forward with interest to the spring when vegetation is again active, to see whether or not any laceration of the sap vessels has taken place.—EDS.]

CAMELLIAS.

JUDGING by reports which I have heard the Camellia season thus far this year has been but a very inferior one; however, as far as we are concerned we must not complain, as up to the present time, on a fair estimation, I have gathered about five hundred blooms of the white *Fimbriata*, than which there may be said to be no more acceptable flowers. *Saccol Nova* has had a large number of handsome pink and white flowers. Amongst novelties to me this season is *Storey*, which is beautifully mottled with pink, red, and white, like *Imbricata* is sometimes seen. Although accounts state that Camellia flowers are poor this year ours are equal to an average, taking all into consideration, thus far. Though the summer has been comparatively unless we had the plants pretty forward in the spring, and no shading was applied on the glass in any form.

Although the Camellia is a hardy shrub it is very uncertain sometimes to count on a full display of blooms, as often just at the period of opening, from some check received, the whole or a large number of the flowers may drop. For example, in such hard frosty weather as we have lately experienced, if the atmosphere be too dry from constant firing, or if the plants be too dry at the root at the same time, I think the buds are then apt to fall. The medium to be aimed at is a moist atmosphere if constant firing is required. Too much moisture at the root also often causes the buds to fall, and the best state to have them in in winter is as near the medium as practicable. It is quite a mistake to suppose that the Camellia will not bear slight forcing, even at this season, to bring on an earlier flowering than otherwise would be the case. Of course great care is needed, but in a gentle encouraging atmosphere I find the plants come in flower much faster than when unaided. It is a great advantage to have a steady Camellia season from October up to early summer, about eight months in the year.—R. M. A.

GARDEN CULTURE OF THE STRAWBERRY.

REMARKS on this subject may at first sight appear to be altogether unseasonable; I venture to think otherwise, and am writing on this oft-discussed but important subject in the hopes of bringing others to my way of thinking. The month of August, or at the latest the first week in September, is usually the time recommended for planting Strawberries, and few if any writers on the subject omit mentioning the advisability of trenching the ground for the plants. I, too, strongly recommend the practice, but not at planting time, not only because there is plenty of other work to do at that time, but because the soil does not have sufficient time to settle completely, a firm soil being very requisite for Strawberries. No

amount of treading will affect some soils much beyond the surface (I am alluding to newly-trenched ground), and it is therefore as a rule much too loose for the plants to take immediate hold of; as a consequence not only is the first season's crop much inferior to what it should be, but there is a probability, and a very strong one too, of the succeeding crops being below the average. To obviate this difficulty my practice is to prepare the ground for the intended bed during the winter months by the ordinary process of bastard trenching.

Although Strawberries are undoubtedly deep-rooting, it is scarcely advisable to bury a quantity of good manure too deeply. I prefer either spreading it over or mixing it with the bottom spit, and if the ground operated on happens to be poor some manure should be worked-in with the top spit. It is a mistake to think that young Strawberry plants require no stimulating. Market growers know better, as those that I am acquainted with manure heavily for the young plantations, the object in view being to obtain vigorous plants in as short time as possible. Trenching with them is out of the question, and some do not even use a "subsoiler," and there is no mistake about the solidity of the soil. The ground I prepare during the winter for Strawberries is not allowed to stand idle during the spring and summer; on the contrary, it yields excellent crops of early and second early Potatoes. The whole crop is lifted at the same time and stored away for use; the ground is forked over and levelled as the process of lifting goes on; all rubbish is cleared off, and it is well trodden and finished-off with a rake. Previous to planting if the weather happens to be showery a dressing of soot is given, but if the soil be dry, which is most frequently the case, drills are drawn where the lines of plants are to come, and these are filled with rather strong liquid manure till thoroughly soaked, and as soon as the soil is in a workable state the plants are placed out. They are planted firmly, using the handle of the trowel to well ram the soil firmly round them. If the weather be dry a good watering is given, and repeated frequently till they are well established.

I usually grow a number of each variety on a south border, which serves the double purpose of giving good early supplies both of fruit and strong runners. They are planted rather thickly, 18 inches apart each way, and allowed to remain one year only. Runners were very late this season, neither were they so good as usual, those on the old plants being very weak indeed, and their growth since being planted has been very unsatisfactory, owing, no doubt, to the cold and saturated condition of the soil. Those planted in the autumn of 1878 by the growers for market, and which are not allowed to fruit the first season, look remarkably well, and I have no doubt will yield very heavy crops next summer.—W. IGGULDEN.

HARDY CYCLAMENS.

THE common name of slowbread, which is applied to this genus of plants, is derived from the fact that in some parts of the world swine eagerly seek for and devour the roots or corms. The numerous forms of *Cyclamen persicum* are generally admired, but it is to those that endure our climate without protection that I wish to draw attention—viz., *Cyclamen europaeum* and its varieties, and *C. hederifolium*, which have succeeded well here for many years planted out in the grass in sandy loam. They have remained undisturbed for years, propagating themselves by seed. They also thrive on a partially shaded rockery and in corners of the borders. Being autumn-flowering plants I find them useful as an edging in the flower garden, and they continue in bloom for several months. They produce seed freely, and when I wish to increase my stock during the summer I take up some of the seedlings in the grass; pot them in small pots in light rich soil; afterwards plunge them in sand or ashes in a cold frame; and in the following spring they may be planted out. *Cyclamen græcum* with its lovely flowers and beautiful foliage only requires to be seen at this season to be appreciated.—CORN, *Yorkshire*.

PRIMULA JAPONICA.—This is generally described as hardy. I have found both old-established plants and a number of seedlings almost as tender as the *Lobelia* or any other so-called "half-hardy plant" when caught outside by the late frosts, especially those plants that had made growth during the mild months of October and November. Many have been entirely destroyed, and nothing but the centres remain uninjured in the best. Hay, short straw, or coal ashes, or better still dry

peat, should be used as protection to prevent a serious check to their growth.—W. J. M., *Clonmel*.

MARÉCHAL NIEL ROSE CANKERING.

As an ardent admirer and earnest cultivator of the Rose I ask for help and information upon the manner of growth of this beautiful variety. I have tried it on almost every known stock with the same unvarying and unsatisfactory result—i.e., canker at the union, beginning at the third, or from that to the fifth or even sixth year. I have two plants in a long Rose house that have not been planted three years, and both are in this condition. I have succeeded in inducing them to throw out roots above the collar by putting on some 6 or 8 inches of cocoa-nut fibre, but the result must remain to be seen. Is there no known stock possessing sufficient vigour to support this Rose's rampant growth? Has it been worked on Gloire de Dijon, Belle Lyonnaise, or better still Madame Berard? With me it succeeds best on the Briar as a standard, but I protect it with glass by securing some lights to Larch poles, and only thin out the weak growth and remove dead wood. I should be very grateful to learn the right stock for this charming Rose, for it is certain that its excessive vigour is too exhaustive for all the stocks with which I am acquainted.—WINCHMORE.

PRECOCITY IN VEGETABLES AND PLANTS AS INFLUENCED BY THE MATURITY OF THE SEED.

LONG-CONTINUED observations, made in the course of testing the comparative periods of flowering and seeding of the different varieties of vegetables and annual plants, have convinced me that in order to secure precocity in the progeny the seed sown must be early and thoroughly ripened; for although late or autumn-ripened seed, even if only partially matured, will vegetate as quickly as that which has been gathered fully ripe, the plants grown from the late seed will not be so fertile, nor so precocious as those from early and well-ripened stocks, but will run more to leaf or straw. This is an important consideration for seed-growers and their customers, as the influence of the past tardy and adverse season will probably make itself felt at the next harvest, and gardeners seeking early vegetables might do well to use, where practicable, good two-year-old seed. It is also a well-understood fact amongst growers that the produce of seed raised on warm and early land will show a marked advance in the period of flowering and fruiting over that grown on cold late land; and I have reason for believing that where the latter circumstances are repeated year after year a deferred and apparently fixed tardiness becomes attached to the stock. Another cause of the degeneration of seed stocks as regards precocity is the tendency of the early seeds to drop, or shell-out, or fall a prey to birds or insects before the bulk of the produce is fit to harvest, or, as is sometimes the case with Peas, Beans, &c., the earliest are gathered green for the pot, and the latest saved for seed. A continued repetition of either of the above natural or artificial modes of selection must also tend to produce a permanently deferred stock, and the necessity and advantage of frequently procuring early-selected sorts from a single precocious plant of any particular variety which it is desired to keep up to the standard of earliness of its precursor is demonstrated.

It is in this manner probably that of late years many of the imaginary advances in the earliness of garden Peas have had their supposed origin. A somewhat similar but not parallel state of circumstances applies to the Potato when grown from early tubers, raisers of early produce being fully alive to the fact, that in order to obtain early Potatoes early-grown seed must be used. It is also well known that the repeated forcing of the same individual plants of Rhubarb and Seakale, and, indeed, of most fruits, flowers, and vegetables, induces precocity the next season. The acquired alteration, however, produced in the seed germ of annual plants being a disposition to hereditary tardiness from want of selection, differs from that in the germ of perennials, which is a tendency to hereditary precocity from repeated forcing, although, perhaps, in neither case is it clear that the tendency is absolutely permanent. This may yet, however, be ascertained.

The whole subject is one deserving of much attention from seed-growers and gardeners in a practical point of view, and should be borne in mind in the comparative trials of vegetables, fruits, &c., by the Royal Horticultural Society and

others. In such trials attention should also be given to the age and condition of the seed used; for if it is either old or has been allowed to get damp it will not only vegetate slowly, but the precocity of the produce will be more than proportionately adversely influenced.—T. LAXTON, *Bedford*.

AN OLD FLORIST IN TROUBLE.

FORTY years ago and upwards, when in "my salet days" I was entering into my first cultivation of the Auricula, there was no name better known or more appreciated amongst florists than that of John Slater; no one who knew as much, I believe, about the history of the Auricula, or who was more ready to impart that knowledge. Well, forty years is a long time and brings its changes and chances to all—to some its larger measure of sorrow, to others a greater amount of prosperity. Amongst the former is this genuine old florist. In a letter I have now before me he says, "The whole of the fingers of both hands are very seriously contracted, and for the last two years I have been labouring with a bronchial affection and require such nourishment as my very small income will not afford." He truthfully adds, "I have not been, I think, a bad member of the floricultural public," and hopes that the florists will not allow the evening of his days to pass in the privations. He is now in his eighty-second year.

On receiving his letter I at once sent it on to my ever kind and thoughtful friend Mr. McIntosh of Duneevan, who with his usual generosity forwarded me a cheque for five guineas. I have added my own contribution of one guinea, and shall be very happy to receive the contributions of any who at this season may be willing to help in this good work.—D., *Deal*.

THE EFFECT OF FROST ON HARDY FRUIT TREES.

A "NORTHERN GARDENER" admits that extreme frost in winter is one cause of failure. This is all I contend for. To contend that it was the sole cause would be foolish. Regarding the particular damage to which I have been so anxious to draw attention, several times last spring I asked gardeners to examine my trees for themselves, and in every instance they commenced to dissect the fruit bud—they never considered it necessary to examine the pith of the wood, on the end of which was the bud. 1877, which is alluded to, was a cold wet season, and fruit buds generally hereabouts were imperfectly formed, and so much so that in the Journal I drew attention to the matter. Sun heat is quite as necessary for perfecting the fruit buds as it is for perfecting the fruit.

The effects of spring frosts being admitted, I wished to show that during winter also the fruit crop might be destroyed. Early in 1879, when the rain, hail, snow, and frosts of May were in the distance, I asked your readers to notice the fruit crops in their districts that we might learn by the degrees of frost in winter at their several places, other things being favourable, what, if any, was the damage done to hardy fruit trees by severe winters. Instead of a year to take such notes of value, unfortunately we have had difficulties in succession "all along the line." This winter apparently is going to give us another chance, though I have an opinion that a week's frost—say of 23°, may do as much damage as one night much more severe: in the former instance we have damage layer upon layer. This continuous effect may not have been so much noticed by those who devote more especially their attention to plants growing under glass; the frost may come, but it is not frequent that plant cultivators are caught napping two nights in succession.

Regarding the wood of the Marie Louise d'Uccle being injured, I may state that the wood of all exposed Pear trees was injured; but I consider that some trees are more tenacious of life than are others of the same tribe but of a different variety. The recouping powers to heal damage vary the same in trees as in man; the broken bone or cut of some men will heal quicker than will the same damage to others. The Marie Louise d'Uccle Pear will, I believe, endure as much or more spring frost than will the Hensle, and it may be able more effectually to throw off winter's damage; but I cannot say, although the wood was black, whether it was equally injured as was the more tender varieties. My desire was, and is, to get others to help to investigate such matters for our mutual benefit. Your readers may take it for granted that I am not the person to "set on" to any pet theory, my love only is for truth, which discussion helps us to find. The very fine

autumn we have had has done much to ripen the wood, but generally buds are not so plump as I like to see them. Regarding pollen being "washed," I have greater faith in the processes of Nature against wet blossoming seasons than seems to be generally held. I do not think that a good shower of rain does pollen the least harm, rather it spreads it; but a long succession of rain undoubtedly causes the blossom to perish, be it in the north or south of England. In fruit-growing especially we have degrees of injury. We frequently have fruit of all qualities on the same branch, the same as we have healthy and unhealthy children in the same family. Now I am of opinion that the cause of deformed fruit may in some instances be traced even to injury to the fruit bud whilst in its dormant state. A deformed fruit, I contend, may be the result of an injured root or of an injured branch, or be traced elsewhere, quite irrespective of what the growing season may be. Fruit buds ripen by degrees, and some obtain the lead, and being so much better matured they result in perfect fruit, whilst others that ought in all respects to be exactly equal, through some function unperformed, either produce deformed fruit or never set at all. A gardener of all men ought to be a thinking man. His peculiarly is a trade of observation; and I think in the matter of fruit crops it is not well that we take all for granted that our fore-elders taught us. Here also we may live and still learn.—JOSEPH WITHERSPOON.

NOTES ON VILLA AND SUBURBAN GARDENING.

Manuring and Digging.—Although there are at present signs of a change in the weather, yet the ground will be so wet for a time and the walks "rotten" that little can be done in the way of wheeling manure, digging, or planting. We wheel our manure during frosty weather into good-sized heaps, and mould it over till near planting or sowing time, preferring this to having it dug in early in the winter, and thereby having its beneficial qualities materially diminished by repeated washings. We are also inclined to think the frost penetrates to a much greater depth when the ground is left undug, consequently the operation is deferred to near planting time, the only exception being those breadths that are trenched. Ours, it must be understood, is a medium soil, being neither light nor heavy, and it is always worked best when there has been no rain on it after being dug. Some very stiff clayey soils require to be laid up in coarse spits as early in the season as possible, and after having been well pulverised by the action of frost, &c., are redug, and thus derive still further benefit from the March winds. Many follow the practice of ridging the soil during the winter months, but one great objection we have to this is that the furrows become saturated and are very "unkindly" at planting time, which is very detrimental to the well-being of its future occupants.

Pruning.—Although much practical information has lately been given on the important subject of fruit tree pruning, a few further brief and simple remarks may be of service to some of the readers of this Journal. Many when pruning wall trees—such as Pears, Plums, Apricots, and Cherries—seem to lose sight of the fact that they are trained to walls, in order that they may be sheltered from frosts and cold winds, and also that the advancing crops of fruit may receive the full benefit of the heat reflected from the walls. Instead of keeping them well "spurred" in to the main branches nailed to the walls they not unfrequently allow the fruit-bearing branchlets (technically termed "spurs"), with their terminal clusters of buds and stumps of pruned growth, to extend 6, 9, and even 12 inches from the wall. Where the trees are in this very unsatisfactory state it is advisable to annually cut back some of these huge spurs to about half an inch from the main branches, using either a pruning saw or a very sharp strong knife, taking care not to drag the spurs off with part of the branch attached. In most instances a cluster of young shoots will push out, which if thinned out and pinched back, as will be hereafter advised, will eventually come into bearing state, and the trees in the course of a few seasons will be in good bearing condition, with little or no loss to the crops during the time they are being renovated. Apricots, Pears, Plums, and Cherries (with the exception of the Morello) are all pruned on the "spur" system—i.e., the young growths, with the exception of the "leaders" or terminal shoots of those that have not yet covered their allotted space, are shortened to within about an inch of their base, and about which, unless the trees be too vigorous, a number of fruit buds will form, and a corresponding decrease of shoots. Those leading shoots which are to form the trees should not, unless weak, be shortened, and nearly every joint will produce a fruit bud, and the growth in most instances will be continued from the terminal bud. Where this practice is followed root-pruning will seldom be necessary. If the leading branches are weak, or more are required, they must be shortened back to near their last starting point to induce stronger growth, or to near the point where a fresh one is required to fill up the space. To be plain, if the tree be a young espalier or horizontally trained tree the main or central stem should be

shortened to about a joint above the third course of bricks from the last-trained pair of branches. When growing again the central shoot to be trained perpendicularly, and the two most conveniently arranged on opposite sides to be trained horizontally, pinching back any there may be left. Fan-shaped trees as they extend will require a few additional branches laid-in to those originally started from near the base of the tree, and in this case the leaders must be shortened to near where these are wanted, the terminal shoot to continue the branch, and another shoot on the upper side to form another main branch. The main branches of fan-shaped trees ought at the least to receive as much room as those horizontally trained, and should on a light and poor soil be 9 inches apart, and on a strong soil 1 foot apart. All varieties of Cherries, with the exception of the Morello type, are treated similarly to Pears; but the Morello produces its fruit on the young growth of the previous year, which is thinned out but not shortened, and laid in accordingly. The Morello succeeds remarkably well in the southern counties in the open either as standards or pyramids, seldom failing to produce a crop of fruit, and they make handsome specimens, especially the pyramids. Where birds are apt to be destructive among the buds of Gooseberry bushes pruning should be deferred to a later period, but Currants may be safely pruned. The young growth of the Black Currant produces the fruit, and this only requires to be thinned out and all straggling branches shortened. Red and White Currants are pruned on the spur system. A good tree consists of about five main branches disposed in a circle on a clear stem, the centre kept clear, and all side, also the terminal, shoots when the bush is full grown well spurred in. These main branches must not be allowed to lengthen too rapidly, or they will be weak and imperfectly clothed with fruiting spurs. A moderately strong shoot may be cut to about 9 inches of its last starting point, but weaker growths must be cut still shorter.

Plants.—In many imperfectly heated structures plants have suffered considerably from the effects of the late frosts. The sudden and altogether unexpected severity of the weather caught many "napping," and much damage was done, even where either the heating apparatus or protecting material at hand would, if properly used, have been equal to the emergency. Cinerarias and Pelargoniums in some instances have been totally destroyed, but many probably might have been saved if proper remedies had been applied. Frozen plants as soon as discovered should be freely syringed with cold water and placed closely together, where they can be covered, in fact completely darkened, by man. It is important that they thaw slowly, hence the necessity of shading from the sun and the use of cold water. The recovered plants are much weakened, however, and great care must be taken that they be not again frozen, or the effect will most probably be fatal. Give air to plants in frames on every favourable occasion. Water carefully those plants requiring it, such as Cinerarias, Calceolarias, and Cyclamens. Bedding Geraniums may be kept perfectly dry, the aim being to keep the plants as sturdy as possible, as in this state they are less liable to damp-off during their long seclusion from the light and air, and the less they grow now the better plants they will eventually form.

WORK FOR THE WEEK.

KITCHEN GARDEN.

IN favourable weather push forward all operations outside, turning up vacant grounds so as to have the full advantage of frost in pulverising the soil previous to planting. This is very necessary on strong soils, and if neglected now it adds considerably to the difficulty of planting. As soon as practicable sow a good breadth of early Peas. For earliness and hardiness William I. and First and Best are to be recommended for borders and the open quarters, and for sowing at the base of south walls Early Premium Gem, Blue Peter, and Little Gem are suitable. Continue to take up and place under cover any early Broccoli which may be coming into use. We have still a good supply of Cauliflower in pits, Snow's Winter Broccoli and Veitch's Autumn Broccoli being very useful. Cauliflowers under handglasses for early summer use should have air on all favourable opportunities, raising the glasses on the south side, or lifting off the tops if portable. Lettuces in frames also require similar attention.

Forcing Department.—Introduce fresh supplies of roots of Asparagus, Seakale, and Rhubarb, also Chicory for salading where required, continuing to maintain the supply of Mustard and Cress by sowings at intervals according to the demand. Dwarf Kidney Beans should be sown in pots at least once a fortnight, and those more advanced should be earthed-up, keeping the plants as near to the glass as possible, in a temperature of not less than 60°. Sow Celery seed in pans for the first early crop, Wright's Giant White and Major Clarke's Solid Red are good varieties. Vick's Criterion Tomato is good for pots or planting-out. Place the pots in a warm pit or house, and when the seeds have germinated keep them near the glass; when large enough pot-off the plants singly in 3-inch pots in rich soil. Potatoes that are growing freely should be earthed-up when requisite, the pots being filled with light soil to within half an inch of the rim. The earliest crops

may be taken from 12-inch pots, three sets in each, advancing them in the Peach houses. Those in pits or frames will require careful attention as to ventilation on favourable occasions, and must be well protected in case of frost. On prepared beds where the soil has become warmed sow Early Horn Carrot and Radish seed in alternate rows 8 or 4 inches apart. Early Nantes is a first-rate Carrot, and of Radishes French Breakfast and White Forcing Turnip are good.

FRUIT HOUSES.

Vines.—Early houses will now require great care in ventilating so as not to admit draughts of cold air, which injure the foliage. Disbud and tie the shoots down before they touch the glass. In stopping do not confine it to any given number of joints beyond the bunch, but extend it so that an ample and even supply of foliage will be insured; but do not crowd the house with more foliage than can be fully exposed to light. Remove all superfluous bunches, overcropping and overcrowding of the foliage being most adverse to satisfactory results. When the flowers are open maintain a temperature night and day of 70° to 75°, and a rather drier atmosphere, not allowing the fermenting materials to decline at this critical stage, but preserve a good heap of Oak leaves and stable litter in the reserve ground to admit of a supply being obtained as required. The Vines intended to supply ripe Grapes in June should be started at once, abundance of fermenting materials being placed on the outside border, or if it be already protected with a good thickness of dry litter or fern, fermenting materials may be dispensed with; and if wooden shutters or glazed lights are at command for throwing off the wet it will be an advantage. Water the inside border thoroughly with water at a temperature of 90°, and economise fuel by the free use of fermenting materials inside the house. Damp the house and Vines two or three times a day when the weather is bright, but in dull weather once or at most twice a day will be ample. The temperature should be 50° to 55° by artificial means, and 65° from sun heat. Vines from which the Grapes have been cut should be immediately pruned. Cut to a plump bud as near to the main stem as possible. This will cause the spurs in course of time to become long; and so they do by any mode, but it is easy to train up young canes for the displacement of such. All loose bark should be stripped off, no attempt at scraping being made, and the Vines washed with soft-soap and water. Avoid soot and clay; they do no good, and possibly harm. Maintain a mean temperature of 45°, with a dry atmosphere in houses in which Grapes are hanging. Look over every bunch frequently, and remove all decayed berries. Ventilate the house on fine dry mornings, and keep it closed when the weather is damp. Where late Grapes were ripened off comparatively early, and it is desired to start the Vines in March, the Grapes may be cut, the ends of the stems being inserted in bottles of rain water secured in an inclining position, so as to admit of the fruit hanging clear of the bottles. Any dry room will be a suitable place where an equable temperature of 40° to 45° is maintained. This will admit of the Vines being pruned and the house being cleaned.

Melons.—Sow the seed at once for the first crop. They may either be sown singly in small pots, or a dozen or more may be placed round the edge of a 6-inch pot, to be afterwards potted off into smaller pots. In either case the pots should only be about two-thirds filled with soil, covering the seed about half an inch deep, plunging the pots in a bottom heat of 80°. Good fibrous loam and leaf soil in equal proportions gently pressed down will form a porous compost for the young rootlets, it being important for this early sowing that the pots be efficiently drained. It is of the greatest importance that the seedlings be kept near to the glass. The varieties of Melons are so numerous that it is difficult to make a selection; but Read's Hybrid, Hero of Bath, and Little Heath may be named among scarlet-flesh varieties; Eastnor Castle, Victory of Bath, and Golden Perfection among green-flesh varieties; and in white-flesh varieties Queen Emma and Golden Gem. If quality be the chief consideration Scarlet Gem, Pine Apple Gem, and Egyptian, with Bromham Hall and Trentham Hybrid are unsurpassed.

Cucumbers.—Those who require a supply early in spring should make up a bed for raising plants at once. It will take about six weeks from the time of sowing until the plants are ready for planting out. Cucumbers like Melons are abundant, but Telegraph, Paragon, and Tender-and-True are reliable varieties.

FLORISTS' FLOWERS.

Auriculas.—Beginners in Auricula growing are likely to be discouraged at the aspect of the plants at this dull season. Leaf after leaf has had to be pulled off; and if they contrast them, as they probably will, with the vigorous leaves they displayed in the summer months, they will perhaps wonder if ever they shall see them again as they were wont to be. Indeed old Auricula growers may wonder, when they see them reduced to a tiny but solid head, how those fine leaves are to issue from them. But let the tyro take heart. If he has taken care of his plants, if there is no drip or want of drainage, he may be assured that even although he does not see his plants that they are all right. Frost is not injurious to them if the drainage is good, but should there be a

defect in this point the plants will suffer. During this severe weather they should be kept perfectly at rest. Of course no attempt at watering will be made, nor, unless the frost disappears, should the frames be open, but be kept close covered with mats, and where snow has fallen on the frames it should be allowed to remain. Alpine plants, of which the Auricula was one originally, are kept warm and dry in winter by their thick covering of snow; and although high breeding has altered somewhat its character, yet frost is not to be so much dreaded as damp. Now will be a good time to prepare compost for top-dressing. Various recipes have been given for this, some adding but little loam to decayed cow dung, others using more loam than in the ordinary compost; but the compost used may, I think, be regulated as to richness by the consideration whether liquid manure is used afterwards, and as I never use it I perhaps make my compost a little richer than many—one-half cow dung and one-half loam and leaf mould: these may now be added together, lumps well broken with the spade (not sifted), and then turned frequently over under cover during the next month. Should a favourable change to milder weather take place the frames may be opened and air admitted, but so long as the frost continues they are better kept close.

Carnations and Picotees.—It has been a trying season for these. Layers were very late in rooting, and thousands never rooted at all; the plants were consequently when potted off very backward and have had considerable difficulty in holding their own during this severe winter. Where growers have had facilities for using heat they have done so to forward the formation of roots, but it requires considerable caution, and is, I think, better done without if possible. Plants should now be carefully examined when there is an opportunity, the dead leaves taken off, and if any show signs of spot they should be taken away. Here again damp is a far greater enemy than frost, and if the pots are well drained and kept dry there need be little fear about their being frozen. Should the weather break let the frames be opened to receive sun and air. Water should not be applied unless absolutely necessary, and it is astonishing for how long in this dead season plants will hold their own without having a drop of water applied to them.

Gladioli.—These, too, have had a trying time. Many were very late in flowering and could not be taken up until a month after the usual time. I intended to try planting a bed in November, but have been utterly unable to do it, and am placing those which I intended for it on a couple of inches of sand under the stage of the greenhouse, and shall plant from thence when I can. Those that I shall not plant until spring I keep in a wooden frame of latticework, each root separate. When they are placed in bags they are apt to stimulate one another to form roots, which I think is undesirable. It is a good plan, in order to prevent mistakes, to remove the rough outer cuticle and write the name on the bulb. I shall shortly get the spawn or young bulbs, which I have taken off from the scarcer kinds, potted in 6-inch pots, placed in the greenhouse, and then when they have started and made roots I shall turn them out in the open ground in the spring. I find this the safest way to keep the sorts distinct and give them a chance of making good bulbs. Before planting I remove the hard outer skin, and thus hasten the starting of the bulb. What do Gladioli growers think of the fact that Mr. Kelway has now one acre of bulbs unlifted and covered with 6 inches of hay to keep out the frost?

TRADE CATALOGUES RECEIVED.

James Carter & Co., High Holborn.—*Catalogue of Vegetable and Flower Seeds (highly illustrated).*

Dickson & Robinson, 12, Old Millgate, Manchester.—*Catalogue of Vegetable and Flower Seeds.*

James Veitch & Sons, King's Road, Chelsea.—*Catalogue of Flower and Vegetable Seeds, Horticultural Implements, &c.—List of Gladioli.*

Bruant, Poitiers, France.—*Catalogue of Trees and Shrubs.*

B. S. Williams, Victoria and Paradise Nurseries, Upper Holloway.—*Catalogue of Flower and Vegetable Seeds.*

TO CORRESPONDENTS.

* * All correspondence should be directed either to "The Editors" or to "The Publisher." Letters addressed to Mr. Johnson or Dr. Hogg often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense. Correspondents should not mix up on the same sheet questions relating to Gardening and those on Poultry and Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

BOOKS (*A Subscriber*).—Mr. Burbidge's work on the "Propagation and Improvement of Cultivated Plants," published by Blackwood & Sons, will be of great service to you. For the cultivation of Ferns and Orchids procure Mr. B. S. Williams' works on those subjects.

WHITE JAPANESE CHRYSANTHEMUMS (*J. A.*).—The only pure white

flowering varieties of these are Alba plena, Elaine, Ethel, and Fair Maid of Guernsey. The following varieties, although not pure white, in most cases approach very near it, being more or less tinted with lilac or sulphur:—Abbi Lagene, Hiver Fleur, La Frisure, Lacinatum, La Nympha, Mdlle. Monique, Jane Salter, Meg Merriess, and Sarnia. Alba plena is the dwarfest growing of the pure whites named, but the others are so pure and chaste as well as good and free bloomers that they are indispensable. La Frisure, La Nympha, and Meg Merriess are dwarf-growing, the first two very much so, while the last-named is indispensable for its late-blooming properties.

DWARFING CHRYSANTHEMUMS (A Tall Grower).—Chrysanthemums are dwarfed in several different ways. Many good cultivators pinch the larger-flowering varieties once or more while young, so that they bloom with seven or eight breaks instead of about three. Specimen plants are dwarfed in addition to pinching by twisting and tying the young shoots to a wire framework, and the plants are made sometimes as flat as a table, and are then not ornamental. Very dwarf plants may also be obtained by striking the points of young shoots in July. Some varieties are naturally of a dwarfier habit than others, notably so La Nympha, Barbara, La Frisure, Antonelli, Gloria Mandi, Princess Teck, and Hero of Stoke Newington, all of which were freely represented in the collection referred to.

TEMPERATURE FOR FERNS (T. T. L.).—*Adiantum farleyense* requires a stove temperature, but the species *A. cuneatum* grows more healthily in an intermediate house. Your greenhouse, having a temperature of 55°, will be suitable for it. Unless we know the names of Ferns we cannot advise you as to their requirements. Perhaps you have been gathering the fronds too closely, and so weakened the plants. Repot them in the spring, removing much of the old soil from the roots, and allow the fronds to mature so as to induce healthy plants.

ROSE GROWING (A. H. B.).—As the "Hints on Rose-Growing," issued by the National Rose Society, have not been sent to us we were unable to carry out your suggestion. We are also unable to answer your inquiry, but if you write to Rev. H. H. D'Ombra, Westwell Vicarage, Ashford, Kent, you will obtain the information you need.

TRAINING RASPBERRIES (Inquirer).—Excellent crops of fruit are obtained under all the modes of training to which you refer, and many tons are annually gathered from canes that are not trained at all. Perhaps the best and neatest mode is to secure the canes to wire trellises, from three to six strands of wire being affixed to firm iron standards, the trellises being not less than 4 feet apart.

DEAD LEAVES ON STRAWBERRIES (T. S. A.).—Although the leaves are, as you say, unsightly we should not remove them for several weeks, as they will afford material protection to the crowns during severe weather.

HEATING AND PLANTING VINERY (L. F., Wimbledon).—By hard firing one 4-inch pipe all round the house would probably enable you to maintain a minimum temperature of 48° during the winter; but as hard firing is both inimical to plants and costly to their owner we strongly recommend you to have two 4-inch pipes, and you will then be able to heat the house efficiently and economically. No greater mistake is made in heating than untidily limiting the extent of piping. When this policy is adopted the water has to be kept boiling during cold weather and a roaring fire maintained. With ample piping the water only needs to be kept at a moderate heat, and this can be maintained with a moderate consumption of fuel. We do not advise you to employ the stove in the vinery; with two rows of pipes it will not be needed, and by no other mode is heat so regularly, and hence beneficially, distributed as from the surface of hot-water pipes. As the rafters of the house are short we should train the Vines up one side and down the other. It does not matter in the least which side of the house they are planted. One of the finest crops of Grapes we have seen this year was produced by Vines planted about 7 feet apart along both sides of a span-roofed house and trained quite over the roof, the rods being 3 feet 6 inches apart. This is quite close enough, although we have seen good Grapes produced when the Vines were 3 feet apart, the distance you name, but the laterals were not nearer than 3 feet apart along the entire length of the rods. We do not advise you to adopt the horizontal training, but we have seen excellent results by training the canes obliquely, thus securing a greater length of rod. The wires should be 18 inches from the glass. As a rule Vines are much more easily managed when the roots are both in and outside, and hence we never advise inside borders alone for amateurs. Plant the Vines in a good inside border, and have the front wall arched or the house supported on pillars, so that the roots can pass outside—indeed, unless you concrete the bottom of the border, and use cement instead of mortar in building the foundation walls, you will not be able to keep the roots inside. An outside border 3 feet wide the first year will suffice, and the same width will do for the inside border, the soil being supported by walls of turf. When the roots protrude through the turf the borders can be widened yearly until the whole space at disposal is occupied with roots. You cannot adopt a better plan than this, and you may plant on the side most convenient for forming an outside border if it is not convenient to have borders on both sides of the house.

NAMES OF PLANTS (Llanghan).—1. *Acacia leptocarpa*; 3. *A. linearis*; 2 and 4 were insufficient for identification. We have frequently stated that we do not undertake to name more than six fruits sent at one time. (J. F.).—The leaf resembles *Polygonum quercifolium*, but it was rather small and imperfect. (W. R. Forster).—The specimen was much shrivelled, but resembled *Tanacetum vulgare*.

farmer the necessity of attending to the details of every branch of farming, and we further hope that he may be induced not only to take an interest in farming matters, but also to feel a pleasure in the daily duties and practical minutiae, which are constantly changing owing to the ever-varying seasons and circumstances by which he is surrounded. At the same time he should use his intelligence, and endeavour to understand not only the practical performance of farming but also the scientific reasons and causes connected with every branch of the business. We therefore recommend to his consideration and notice the motto of the Royal Agricultural Society of England—"Practice with Science," in order that he may acquire the utmost proficiency in his calling for this is really what will avail him most through all the changing scenes of life in which he may be placed.

The article each week given under the heading of "Work on the Home Farm" will have gone far to characterise the unusual season through which we have passed; but it is without a parallel, except we go back to the year 1816, called the "black summer" in some traditional statements of its extraordinary character. The season of 1879 will not only have left a lasting impression upon the minds of all those engaged in agriculture, but will even in the next year greatly influence the practical management of the home farm and make cultivation more costly. In the various districts which we have lately inspected we find, upon the heavy and strong soils in particular, the evidence of how impossible or difficult it has been to cultivate the land and leave it in a cleanly and favourable state for cropping in the coming season of 1880. The actual agricultural year ends with the month of September, and it is so far satisfactory to find that the heavy rainfall ceased about that period, and that the months of October, November, and December have been unusually dry, the absence of rain being very striking, and far below the average rainfall of these months in ordinary seasons. We must now, however, revert to the year commencing with October 1878, and we have to notice that the seed time for wheat was generally favourable, and, although the later sowings were a long time in the ground in consequence of frosty weather, the plant of wheat was about an average; yet in consequence of several periods of open weather and thaws, again succeeded by severe frost on the heavy lands, the plant was rather deficient in some districts. Referring to the matter of autumn tillage in 1878 a considerable breadth of land upon dry soils, and particularly in the eastern and south-eastern counties, was fairly tilled upon land intended for roots, &c., in the spring, and it is only in those cases that the seeds could be sown at the earliest period. The summer of 1878 was unfavourable for cleaning the land where the autumn tillage was neglected, or could not be effected by the pressure of work owing to the difficulties of the harvest, there has been in reality no time since we entered the year 1879 when the land could be fairly cleaned and tilled for roots.

We will now speak of the year 1879—that is to say, the agricultural year, commencing with October 1878 to the like period in 1879. We have to report not less than 44 inches of rain, or about one-fourth over the average, and the excess of rainfall unfortunately happened during the months of most consequence to agriculture, and when the greatest mischief by heavy storms of wind and rain was sure to do the most damage. In the three months of June, July, and August we had more than double the average of rain. The heavy rainfall was followed by sunless weather, added to which the temperature was so exceedingly low, and proved the cause of the great and serious deficiency of nearly all agricultural produce. Compared with the previous agricultural year of 1878, when we had six unfavourable months, this year we have to record ten wet and seriously injurious months out of twelve. In continuing our observations relating to the year 1879 we have to state that, although hindrance was felt at the seed time for beans, peas, barley, oats, potatoes, &c., yet the work was done fairly well, but in some cases rather later than usual. The seed time for roots was much worse than for Lent corn, because the previous season having left the land in general very foul with couch grass it was necessary that the

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

A RETROSPECT OF THE HOME FARM, 1879.

HAVING contributed to these columns every week during the past year our experience upon a variety of subjects connected with the work of the home farm, we trust that our remarks have induced all our readers who are engaged in farming to consider carefully the points laid down as requisite in connection with each subject. We must impress upon the mind of the home

fallows should be tilled and cleaned, and in the attempt to do so the season was late or lost altogether upon thousands of acres. Very little mangold seed was sown at the proper time, or Swedish turnips either. When a plant of roots was obtained, at hoeing time it was found impossible to work the horse hoe with the usual effect; it was the same with the attempt to single the roots by the hand hoe.

The hay-making period now demands our attention, and although the weather up to that time was favourable for the crop of grass, which proved a full average, yet the continuance of rainy sunless weather was exceedingly adverse to the making or saving of the hay in good condition. The field hay may be said to be generally more or less damaged, but the dry park and pasture hay fared better, because, not requiring so much time in making, in a few instances it was stacked in good condition. The crop from the irrigated land and low-lying meadows at the brook-sides subject to floods it was found utterly impossible to secure, even in fair condition; large quantities, too, being washed away by the floods. This state of things continued until the corn harvest, which was extremely late, little corn being cut, even in the early districts, before the end of August. At this point we begin a very sad tale. No cereal crop can be reported near an average except oats. We shall, however, content ourselves with a description of the wheat crop only, and given in Mr. J. B. Lawes's statement of the result of his wheat harvest upon land which had been cropped with that grain for a period of twenty-seven years in succession. This we find wonderfully exact, and illustrative of the general crop of the various districts in the kingdom, judging by what we have seen and heard; for although we have inspected farms upon which we found a fair crop as to quantity per acre, yet upon others we have visited the crop would scarcely pay for threshing, the grain being light and thin in every instance without reference to the crop. Mr. Lawes says, "For seventeen years commencing in 1868, which is the year in which I commenced to give an annual report and estimate of the wheat crop, the mean produce of the three artificially manured plots was 55 bushels per acre, with an average weight per bushel of 62½ lbs. In 1879 the very same manures have given an average of only 19½ bushels, at 53½ lbs. per bushel, equal to only 16½ bushels, at the same weight per bushel as in 1868." We have here a striking illustration of how great is the influence on the result of the farmer's efforts, of circumstances entirely beyond his control, after he has employed all the resources at his command to obtain a good crop. With regard to the effects of the weather during harvest it is truly deplorable, for not only was the corn extremely thin and light, but it was stacked in such a damp state that a large portion of the grain is absolutely unsaleable, and is being used on the home farms as a feeding material for various kinds of stock. A large portion of the barley crop was harvested in such wretched condition, and also being immature at harvest time, that some of the best samples are found to work badly, and the malsters are consequently buying foreign barley in preference, some of which, however, is, we hear, but little better. We now come to the question of dairying and the consumption of grass upon the home farm, and this has proved a much less profitable business than in the average of seasons. Various large dairies have sent to the London market some forty or fifty gallons of milk less daily than in the previous year. The making of butter and cheese has been diminished nearly in the same proportion. Where the grass has been consumed by fattening bullocks the result has been very inferior to that of ordinary seasons. Store cattle have done fairly well; but sheep have done badly, even upon the driest pastures; but upon low-lying meadows in various counties, particularly in the south-western and midland districts, an immense number of sheep have been found coated and rotten, and, without doubt, many that have not been lost entirely are seriously affected in the liver, and will prove unprofitable stock in the future.

In concluding the retrospect of this disastrous year we must ask the home farmer, especially upon large occupations where crops are grown for sale as well as consumption upon the farm, to take a review of the circumstances by which he is surrounded. The price of wheat is so low, and seems likely to continue so, that it will enforce a change in crops and the rotation of cropping; and as the home farmer is better situated than the occupying tenant farmer, having no restrictive lease to bind him, he will be enabled to use his own judgment in the alterations which may be necessary under the adverse influences of the period. We intend, too, in the future to take up some of the most important subjects, and treat upon them in these columns, with the view of calling the attention of the home farmer, and directing him, according to our opinion, as to what should be done in the interest of the business of the farm in the altered position of agriculture generally.

POULTRY IN THE PAST YEAR.

ANOTHER year dawns upon us; all must earnestly hope, if not confidently expect, that it may be a more propitious one for man and beast than the one which a few hours ago was numbered with the past. It was a year strange for the continuity of its fits of weather. First came nearly five months of uninterrupted cold

with incessantly biting winds, then a season of almost continuous rain for nearly four months more, and then a dry but cold autumn and a severe early winter. We must not encroach upon the province of the clerk of the weather, but simply are now interested in its effects upon our feathered favourites. Early chickens there were none, at least for those who, like ourselves, rear chickens in a rough and hardy way. Some fanciers there are who expend much time on January chickens in heated rooms and sunny crystal palaces. If ever such costly appliances answer they certainly ought to have done so in the past year. Our experience of January chickens was a sad one. For years we had not attempted hatching any so soon, but late in the autumn of 1878 a Turkey hen became broody. The temptation was great, and the poor bird was kept waiting till such a time as would give us chickens on New Year's day. Duly did the poor little creatures make their appearance, but soon succumbed to 23° of frost in their shed, in spite of the warmth of their gigantic foster-mother. Our mishap was only one of many, and typical of the year. There is, however, consolation to be drawn from these early disasters in the fact that, in spite of them all, some singularly fine young birds were to be seen among the year's produce, some of them, probably, birds of unusual vigour which had weathered all storms and lived when the many perished. Others, as was the case in our own yards, seemed to make up for their late births by extraordinary rapidity of growth and early maturity. A fowl which can stand a wet season certainly thrives in it. Vegetable and insect life then abounds, and the bird's growth has no check from want of it. It has been instructive to observe which breeds have flourished in the past season and which have not, as a test of those which are suited to a damp climate. At the early shows, before our rainy season was over, none put in so good an appearance as Dorkings. We have always observed that fine specimens came from the west of Scotland, and thence have been confirmed in the conclusion from our experience that Dorkings do not suffer like many breeds from damp. The result of this year strengthens this opinion. Asiaties on the other hand, till quite the later autumn, when the dry weather had begun to tell, were much behindhand. It seems as if ground ever wet absolutely prevents the growth of foot feathers. We had a brood of Japanese Silky chickens from well-feathered parents with all the downy appearance of much leg feather in their early days, which turned out by September almost quite devoid of it. Even the hardy Game seemed loose in feather and condition, and at the early autumn shows did not look themselves. We were surprised here and there to see Polish chickens of great merit. This may be accounted for by the fact that the breed must always be kept much under cover; and those who have appliance for such shelter can of course use it continually in a bad season.

At shows the old and long-established breeds have held their own in numbers. About a year ago we took occasion to remonstrate with the new taste of some judges in favouring leggy Dorkings. An improvement in this respect has taken place; and through the past season we have seen many of the highest honours given to birds of magnificent shape. In Brahmas we still regret to see size, shape, and apparent vigour often placed behind mere beauty of marking. A truly robust Brahma is a magnificent bird, and its characteristic of strength should not be lost sight of. It is a pity that the great authorities on each breed cannot come to some conclusion as to what ideal of perfection should be aimed at in their specialities. Nothing is more detrimental to the advance of the fancy, or more discouraging to young fanciers, than fashion in the points desired. We are at the present moment thinking of the changes in judgment which have taken place as to vulture hocks. If we are not mistaken, when first we saw Brahmas many of the best had vulture hocks, and such won. Then fancy turned against them. The great breeders advertised that the vulture-hocked birds had been ejected from their yards, and cups and prizes went at times to those almost bare-legged. Now a strong reaction has set in, and the heaviest feathering is almost indispensable. All this change is foolish. The same holds good in a minor degree with Cochins, and they, too, are now seen, and in cup pens too, with stiff hocks; this we think a great error. A Cochin is a bird of down and softness. Its great downy cushions are its beauty, and stiff quill feathers ill agree with this. Why have tails always been considered a drawback to the race? Doubtless because they break through the softness of its cushions. If, then, a stiff tail, so difficult to get rid of, is *de trop*, why should stiff hocks be encouraged?

A great feature of the poultry year has been the improvement of some of the newer varieties, which are now everywhere presenting full classes: Leghorns of both kinds, beautiful Andalusians, and (we can hardly say beautiful) Langshans, not to mention Sultans far prettier than their ancestors. Game Bantams are by no means what they once were. The quaint Japanese seem popular, and are very interesting from the variety of colours obtainable from one stock. Our breeds of Ducks are on the increase. Pekins have become general favourites. We never knew any breed of poultry which was so rapidly distributed over the country. We are promised another breed from France, the Duclair Duck; if a pure and useful one remains to be seen.

Artificial incubation comes daily more into vogue. At last we seem approaching a point in its history at which it really will be made practicable and profitable for small poultry yards. Hitherto it has seemed to us as only reliably useful for hatching on a large scale. Those who have time and opportunity of giving their mind to the question would really be doing a public service if they would fairly try, not one or two, but several of the carefully elaborated machines now offered to the public, and publish their comparative notes.

Lastly, we have much satisfaction in congratulating all true fanciers on the fact, of which strong evidence has been brought to our notice, that the disgraceful practice of "trimming" birds for exhibition has effectively been checked. Two or three years ago its advance threatened to drive all honourable exhibitors out of "the fancy." The stream has, however, been tided over. Still, vigilant judges and vigilant committees must not relax their efforts to keep the pursuit uncorrupt. Year by year old and honoured names disappear from the roll of fanciers. It is natural that such should be the case; but new enthusiasts with new zeal spring up. We know of several such this new year. We welcome them, and wish them much success through 1880; and week by week in simple rules and by practical hints shall strive to help them towards it.—C.

GUILDFORD POULTRY SHOW.

THIS Show was held in connection with the Surrey Agricultural Society at Guildford. The pens were arranged in the Skating Rink, a dry well-covered building, very superior to the cold draughty green market in which the Show has often taken place. We saw a marked improvement in the quality of the birds all round. In former years nearly all those worthy of note have come from one yard, but this was by no means so on this occasion. *Dorkings* were good all round; the first pair (Taylor) of adults, grand Dark birds, both Crystal Palace cup-winners, if we mistake not; second (Cresswell) Silver-Greys, also well-known cup birds. First (Taylor) in chickens, and cup for the best pen of *Dorkings* went to capital Darks again, and second to (Cresswell) Silver Greys. The Whites were some of the best known winners of the breed, and the Cuckoos better than they have been of late. *Cochins* were very few considering that a cup and £5 10s. in prizes were offered for the breed. In the adult class fine Whites (Buckmaster and Parrott) took both prizes; in the young class Buffs were first and Whites second (Buckmaster). *Brahmas* were far more numerous and better than we have ever before seen at Guildford. The first (Joyce) pen of Darks contained the Birmingham cup cock in fine form; the Dark chickens were poor. Both classes of Lights were very good; the first (Glover) adults, massive birds with well-defined hackles; second (Wheeler) also well-shaped birds. The *Brahma* cup went to the first (Welch) Light chickens, a well-shaped short-legged pair. The cockerel in the second (Davies) pen was a lovely bird, but over-feathered on hocks. Adult *Games* were fair; chickens a poor lot, in fact we could not conceive why the Judge gave a prize to the miserable Black Red chickens which had first (Merriman). The *Houdans* in the first (Pearce) French pen were good, specially in crest; and the *Crives* in the second (Countess of Lovelace) were short-legged useful-looking birds. *Hamburgs* were well represented, the three winning pens all good Golden-pencils. The "Any variety" class brought out ten pens. First (Huish) Golden Polish, which we thought ought not to have held the place, as the cock had lost a great part of his toes. Fine *Malays* second (Balchin) a well-shown White Leghorn; third (Titmas). *Game Bantams*, as usual at Guildford, were about the best class, with fourteen entries. First and cup (Vigers) went to Black Reds, the cock beautiful in colour and fair in style, but the hen rusty and poor; second (Docksey) to fair Piles, rich in colour; third (Anns) to Black Reds, which should undoubtedly have had the cup. This was not merely our opinion, but that of every fancier we met with who had seen the class; they were such a pair all round as is seldom seen, and should win anywhere. In the other Bantam class Black and White Japanese came in first (Cresswell), a good Black Rose-combed from the same exhibitor being second.

Aylesbury and Rouen *Ducks* are not so large as they ought to be in such a poultry-growing district. *Aylesburys* were first and second, and Rouens third. The "Variety" Duck class was far beyond any we have before seen at Guildford, twelve pens being shown. First (Countess of Lovelace), and second (Langford) went to the popular Pekins. Among the highly commended were a particularly good pair of White Call Ducks belonging to Mr. Claud Fuller. *Geese* were few and not fine. *Turkeys* more numerous but decidedly small, which we regret to see. In many a Surrey farm *Turkeys* are to be seen, which if only a little pains were taken to introduce fresh blood from good yards, might be doubled in size; a large bird eats little more than a small one, and costs no more trouble, it is therefore a far more profitable tenant of the rick-yard. The first adult *Turkeys*, Blacks, were the best pair in the Show.

Pigeons are still all shown in one class at Guildford. They numbered thirty-three pens, and among them were some very

pretty pairs. The first four prizes went to Mr. Cresswell's birds, their last appearance in Surrey, we believe, before their removal to Herefordshire. First were Black Turbits; second, Yellow Turbits; third, Archangels; fourth, White Fans. We should have arranged them a little differently, as the Fans were a very remarkable and flat-tailed pair. Fifth (Savage), some pretty *Dus Carriers*; sixth (Bristow), tolerable *Antwerps*; seventh (Bakewell), very poor Archangels, which might well have given way to many other pairs. The whole Show was judged by Mr. M. Leno.

We hope, ere long, to see a considerable improvement in this Show. The prize list is good and liberal, and Guildford is not only the centre of a county celebrated for poultry, but is a place now easily reached by rail from every corner of the county.

CHRISTY'S HYDRO-INCUBATOR AT THE ELGIN SHOW.

THE following report has been issued by Sub-Committee appointed to superintend the management and working of the incubator:—

At the Elgin Poultry, Pigeon, and Cage Bird Club's third annual Show there were exhibited a set, No. 8 of Thomas Christy & Co.'s appliances, consisting of hydro-incubator, hydro-rearing mother, and open-air rearer. The machines were kindly lent to the Club for a month in order to be tested by a Sub-Committee who were appointed for that purpose.

The working of the incubator commenced on the 19th of November. It was placed in a vacant room of a private house. None of the Committee had previously seen an incubator, and they had to be guided solely by the instructions given in Mr. Christy's pamphlet on "Hydro-Incubation." The object of the Committee was to have chickens hatched a week previous to the Show, and to continue the process of hatching up to the date of the Show, so as to give poultry breeders an opportunity of seeing chickens under the rearing mother, and to see the incubator in working order. Eggs were placed in the incubator on the evenings of the 19th, 22nd, 25th, and 26th of November. All the eggs were tested eight days after being placed in the incubator, and unfertile ones removed. There were found to be fifty-two fertile eggs, of which thirty-six hatched out chickens, being a percentage of 69.23. Of the sixteen eggs unhatched eleven contained dead chicks fully formed, and the others had died at earlier stages of incubation.

The Show commenced on the morning of the 18th of December. There were then five eggs unhatched in the incubator. The eggs were removed from the machine, which was then carried to the Show hall half a mile distant, and the eggs again placed in it. Four of these eggs hatched out chickens in the morning of the second day of the Show.

With the exception of one chick that died on the day it was hatched all the chickens are strong and vigorous. They were shown in the rearing mother during the two days of the Show, and the general remark by poultry breeders was that they had never seen more lively and vigorous chickens.

From the 19th to 28th of November the weather was fine. From the 29th of November to 18th of December there was a snowstorm with intense frost. The readings of the thermometer were lower than they had been for several years.

Taking into consideration the severity of the weather during the greater part of the course of trial, and that the working of the incubator was in inexperienced hands, the Committee consider that their trial of the incubator and rearing mother is very satisfactory, and that the practical utility of the machines has been clearly shown.

(Signed)

J. PRIOR,
L. MACKINTOSH,
ALEX. MATTHEW,
MICHAEL ANDERSON,
PETER GRANT.

VARIETIES.

At the Waterloo Poultry and Pigeon Show, to be held on February the 3rd and 4th, no less than sixteen cups will be offered as prizes, varying in value from two to five guineas, which are contributed by several friends of the Society.

— We have received the schedule of the Shrewsbury Poultry and Pigeon Show, to be held January 22nd and 23rd under the rules of the Poultry Club. It is one of the best lists we ever saw, and should place the Show quite in the front rank of such exhibitions. Formerly the Bristol Show, held about the middle of January, used to be one at which later chickens came out and did themselves justice. After a year like the past, in which many of the summer chickens seem turning out the best, Shrewsbury will offer the same good opportunity for their Exhibition. There are fifty-two classes for poultry, all with first prizes of £2 or £3, including three for *Dorkings* (cock and hen), four for *Cochins*, seven for *Game*, four for *Aseels*, five for *Hamburgs*, three for *Polish*, three for *French*—a grand opportunity for fanciers of *La Flèche* or other of the rarer French breeds. *Silkie*s have a class

to themselves. Silky fanciers should remember this, as we believe the breed have nowhere had a special class during the past season. Bantams are liberally treated with six classes. Admirers of the rarer kinds should study the schedule, for there is a class for "Any other variety" when Sebrights and Black Rosecombs have already been provided for. Ducks, too, are well cared for with no less than five classes. Pigeons, too, are well classified. The Secretary of the Show is Mr. W. B. Payne, High Street, Shrewsbury.

— THE next quarterly conversazione of the British Beekeepers' Association will be held on Wednesday, January 14th, at 6 P.M. at the Board-room of the National Chamber of Trade, 446, Strand. Subject for discussion:—"The Ligurian Queen Bee—Her introduction to alien stocks, and the best means of pure propagation." To be introduced by the Rev. George Raynor of Hazeleigh Rectory, Maldon, Essex. In order that the necessary arrangements may be made, the Hon. Sec., Rev. Herbert R. Peel, Abbot's Hill, Hemel Hempstead, will be glad to hear from those who contemplate being present at this meeting.

— WE have received a report on continental butter making, by Rev. Canon Bagot and Mr. James Robertson, who were sent by the Royal Agricultural Society of Ireland to report on the systems of dairying practised in Holland, Denmark, Sweden, North Germany, &c. The report is an elaborate one, and contains much valuable information and many useful suggestions. We have also received a report of the same nature by Mr. Dawson A. Milward, who was sent on a similar mission, and has recorded his observations in a clear practical manner. These reports contain so much instruction on an important subject that we recommend their perusal by all who are identified with dairy farming in this country.

— A CORRESPONDENT sends us the following instance of successful farming by students in contrast with results attained in England; but, as our friend observes, the circumstances, systems, values of land, produce and labour are different in the two countries—"The Agricultural and Mechanical College of Kentucky, under the superintendence of Professor J. K. Patterson, has raised, by student labour, on the sixty-five acres of arable ground which it cultivated, the following: 1800 bushels of corn, 600 bushels of Irish potatoes, 70 bushels of sweet potatoes, 278 bushels of wheat, 200 bushels of turnips, seven tons of Hungarian grass and white millet. Besides growing its own tomato, cabbage and sweet potato plants, it sold plants amounting to over \$50. It has disbursed a large amount for student labour. The pay-roll last month amounted to over \$150. Notwithstanding these expenditures it has still a considerable balance in the treasury, besides having on hand most of last year's crop. Its matriculation list last year was fifty per cent. over that of the preceding year, and the matriculation list of the present, so far, exceeds that of last year by thirty per cent. These facts show that under economical and judicious management the success of an agricultural college is certain."

— WE cite the following from the *American Cultivator* relative to the best food to produce eggs—If hens have too much corn (maize) they get too fat to lay. A little corn given daily is good, as it keeps fowls warm and healthy, and, as is the case with butchers' scraps, will make them lay some eggs, but the latter will not be of the finest flavour. The best egg-producing food is claimed by some to be five parts of bran with one of middlings, which in the morning should be moistened with scalding water, or, far better, with skim milk, taking pains to have it rather dry, though all damp. If the fowls do not eat it readily at first sprinkle a little Indian meal over the top. Be careful not to mix any more than they will consume during the day, and at night give them shelled corn or wheat. Hens should not be kept longer than three years. In winter cooked food is recommended for fowls. Meat is an essential food for poultry, especially in winter when they cannot get worms that may be picked up in summer. The habit of giving much food in short space of time is a bad one. In their natural condition the process of picking up their food is a very slow one.

THE ALEXANDRA PRIZE HIVE (IMPROVED).

It is with pleasure that we redeem a promise of which we have been several times reminded, in giving a description and illustration of the hive of Mr. J. M. Hooker of Sevenoaks, which will be remembered by most of the frequenters of apicultural exhibitions on account of the neatness of its appearance and beauty of its workmanship, while its merit would appear by no means to be solely external, since it at South Kensington and at several of our leading shows first honours have been awarded.

The illustration gives us the back view. The super cover being opened, and standing, through the introduction of a wooden stop, at right angles to its closed position, forms a sort of screen for the operator against the bees that may be finding their way to the alighting board, while it furnishes a capital little table upon which to place smoker, syrup, knife, &c.

The hive proper or body box contains eleven frames, which were supplied in the hive exhibited with pieces of comb foundation of

triangular shape and apex downwards. These were small in the outer frames, but increased in size as we approached the centre of the hive so as to provide the form a swarm in cluster would take up if it made the middle frame its head-quarters. The two windows are of double glass to conserve heat, while shutters (open in the illustration) close over them. The window at the side by the removal of a pin falls back at top, so as to give lateral space for the more easy lifting of the frames of comb from above; but if it be desired to remove combs while supers are upon the hive, or while the hive is being worked upon the storifying plan as presently explained, the window can be taken away bodily, allowing the withdrawal of frames through the hive side, as is usual in Italian apiaries.

At the right side of the figure may be seen an addition in form like a lean-to greenhouse. Here are placed section boxes endways towards the frames of the body box, and separated by perforated zinc to prevent the entrance of the queen into the sections. This rack can be easily removed, when the sections are quite under control. Wooden separators are used between the boxes to prevent the combs from being built with irregularity, and to give space for glazing for market.

Above the body box stands a second hive which may contain an independent stock, using a flight hole placed just over the

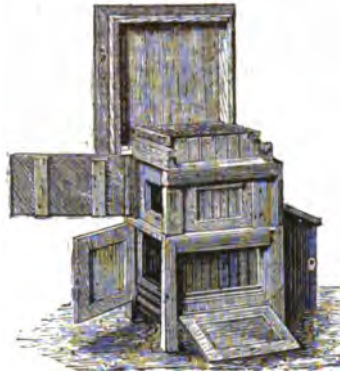


Fig. 4.

roof the portion of the hive already described. The idea of the inventor, however, is to utilise this hive for any issuing swarm, which should be allowed to work separately until its combs are furnished with brood, when swarms and parent are united (an adapting board then replace the crown board of the latter), giving an enormous population for super work. It is also suggested that if the two hives be working independently, the bees may be wholly removed from one and communication opened between them. The hatched brood of the two stocks will store the upper combs, which must be continually emptied by the extractor.

The crate of sections is alike simple and convenient. Parallel wedges pinch all into perfect contact, while in an instant each one can be made free. Carpet covers them above, at the edges of which pine strips are nailed, keeping it in position.

This excellent and ingenious hive, therefore, admits of being worked either by supering, storifying, or as a collateral, by arrangements which not only do not interfere with one another, but which seem to leave little to be desired either on the score of completeness or convenience.—F. CHESHIRE.

MODERN BEE MANAGEMENT.—No. 15.

FERTILISATION OF QUEENS.

IN former papers we have shown that it is within the power of the bee-keeper greatly to assist his bees in almost every department of their work. Not to mention the artificial abode with all its comforts which he provides for them, he is now able to supply them with artificial honey, pollen, and comb. He can control the instincts that tend to hazard their existence in such a fitful climate as ours, such as excessive swarming and the production of an unnecessary multitude of drones. He can anticipate their wants in view of finding a successor for an aged or infirm queen, and come to their aid when from loss of a mother at an unseasonable time they could not raise another. But there are limits to his powers of assisting them. Problems are still unsolved, though still inviting trial. Who knows but that at no distant period we may as a result of careful selection, be in possession of an improved race, with larger bodies, longer tongues, greater powers of endurance, and even stronger honey-gathering instincts? The results of recent experiments in regard to the fertilisation of queens removes the chief obstacle to the solution of these problems, for it has long been evident to intelligent bee-keepers that an improvement of the race of bees can only be effected through the queens. The attempt to breed larger bees by giving them larger cells has

ended in failure; but when we can go to work with selected queens and selected drones we may well hope for success.

This question of an improved race is no mere chimera. It does not even imply any dissatisfaction with the race we now have. It springs from the well-observed fact that in any given apiary, while all stocks are good, some are better, and one, it may be, decidedly the best. We do not refer to the mere animal strength of stocks, but to their developed instincts. Some excel others in the vastness of their populations, others in the habit of storing greater supplies. Some are gentle as flies, others fierce as hornets. Some are so attached to their brood that it is difficult to dislodge them from their combs, while others on the slightest disturbance rush in every direction as if devoid of maternal instinct altogether. And it is noticeable that such characteristics are not transitory, but from month to month and year to year, so long as the same queen is mother of them all. Change the queen and you in a short time change the character of the stock for better or for worse. Now it is evident that by breeding-up from queens whose progeny show the desired characteristics we may hope at no distant date to improve the race considerably, at any rate to bring all our stocks up to the level of the best we at present have.

Hitherto all such attempts have proved abortive from the fact that we had no control over the queen's choice of a mate, and could not even insure her mating at all. Left to nature the virgin queen issues from her hive as early as the fifth day of her life, and soaring aloft meets the drone; but this is rarely accomplished without several such flights, extending often over many days. The watchful bee-keeper, intent on discovering whether she is yet fertile, can only in most cases await the production of eggs. Even then, indeed, he cannot be certain, but must wait to see whether these eggs develop into worker grubs. If intent on breeding Ligurians in their purity he must wait till these grubs hatch out into perfect bees before he can say to what strain they belong. He may indeed by careful watching be fortunate enough to see the queen return from a successful flight with the well-known mark of fertilisation attached, but what strain of drone she had met he cannot tell.

Now, however, all this uncertainty, and weary waiting, and disappointed hope, promises to give place before man's ingenuity and perseverance. For ten years past experiments in the line of fertilisation in confinement have been carried on chiefly by our restless neighbours on the other side of the Atlantic, and with occasional symptoms of success. Glass globes or tumblers, wire enclosures, and dark chambers, have all been tried, but the honour of achieving decided results belongs to Professor Jared Haabronck of New Jersey, U.S., by the simple use of an empty sugar cask! In 1878 this gentleman carried on an elaborate series of fertilisation experiments, using various forms of wire and glass cages for capturing the queen as she came forth on her errand, and confining along with her the selected drones. In several cases he was successful, but felt that the success then attained was more than counterbalanced by the loss of time and the uncertainty of success. After a winter's cogitation he returned to his task during the past season with improved means. These not at first answering the purpose, he hit upon the idea of giving the queen and two or three drones a place to fly in that almost compelled them to keep constantly on the wing, and that within an inch or two of each other. This was simply an empty sugar barrel with a close-fitting cover having a 4-inch hole in its centre. On the inside of this cover, under the hole, he fixed a piece of glass, and having caught the queen as she issued from the hive he dropped her with the selected drones into the barrel and closed the cover. In less time than it takes to tell it she mated with one of the drones. In subsequent attempts he did not wait for the queens issuing from the hive, but picked them off the combs when he judged them to be of proper age, and was successful in each instance. On dropping them into the barrel they immediately flew to the light in the cover, and as there was no resting place adjacent they were compelled to fly round each other in close contiguity till they mated. It will be easy to provide a more convenient chamber for fertilisation now that we have learnt the principle. Such a chamber must be so contrived that by no possibility can the queen escape either when being put in or removed, else she would in all likelihood be lost, not having flown before. It should also permit of the bee-keeper having a view of the interesting operation, so that he may know exactly when to remove the queen. A sort of sentry-box with the small light in the middle of a flat roof is the form that suggests itself to me, and which I mean to adopt another season.

If, as I have no doubt, the discovery should prove equal to the occasion, it will be a great step in advance, and cause 1879 to be remembered in the annals of bee-keeping. It will enable us to rear our own Ligurian queens in their purity instead of having to import them at great cost. It will deliver us from the annoyance of having palmed on us puny half-developed queens, such as are being reared for us by the Italian breeders of late years, queens that as a rule do not survive in fertility over a year; and it will save much time and make us independent of the weather so far as queen-rearing goes. To me the discovery is particularly welcome after a season so extraordinary, that out of a large number of

virgin queens I have not been able to get a single one fertilised. —WILLIAM RAITT.

OUR LETTER BOX.

QUANTITY OF FOOD FOR HORSES (N. E.).—For a wagon horse we consider half a bushel of crushed oats and half a bushel of Indian corn per week a very short allowance, with only cut straw *ad libitum*. 14 lbs. per day of good clover or sainfoin hay is sufficient with a little straw cut into chaff with it. We should prefer to increase the corn rather than give more hay than we have named. If roots are available, either Swedes or mangolds, we should prefer giving 10 lbs. per day of either per horse, pulped and mixed with the corn, hay, and straw chaff as being the best economy, and best for the horses in work. All dry food alone for working horses is not so healthy for them.

LANGSHAN FOWLS (R. McP.).—We cannot inform you where you can obtain birds or eggs of this breed. Those who have them for disposal should advertise.

SILVER-SPANGLED HAMBURG POINTS (P. D. D.).—In both sexes the deaf ear should be faultlessly white and perfectly round. The tail should be white, mooned with black at the tip of each feather. The combs should be full of points, firmly placed on the middle of the head, piked behind, and the pike turning upwards. Breasts well mooned. The hens should have striped hackles. Weight is of no consequence.

LEG-WEAKNESS IN BRAHMA ORIENTALS (Oxon.).—It is more than probable the bird has outgrown its strength. At this time of the year, and in this weather, he is not likely to remedy it. If you have other good chickens we advise you to put him in the stockpot, or in a pie or pudding. With cold weather and long nights the reparative process is very slow.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.		9 A.M.					IN THE DAY.					Falls.
1879. Dec.	Barom-eter at Sea and Level	Hygrome-ter.		Direction of Wind.	Temp. of Air at foot of bar.	Shade Tem-perature.		Radiation Temperature.				
		Dry.	Wet.			Max.	Min.	In sun.	On grass.			
We. 17		30.577	deg. 51.8	deg. 21.8	N.	deg. 35.0	deg. 39.4	deg. 22.1	deg. 31.1	deg. 23.7		
Th. 18		30.598	35.0	35.0	N. N.E.	38.1	37.9	22.3	48.5	27.8		
Fri. 19		30.609	32.2	32.0	N. N.W.	33.1	34.6	30.2	37.8	25.4	0.016	
Sat. 20		30.521	33.2	33.2	N. E.	38.0	34.6	32.1	36.5	29.4		
Sun. 21		30.585	36.2	36.2	S.	38.0	32.3	36.2	32.3	26.5	0.027	
Mo. 22		30.453	40.2	40.0	N. W.	38.0	43.6	36.1	50.6	26.3		
Tu. 23		30.784	34.9	34.5	N. W.	33.1	36.3	37.5	37.9	22.7	—	
Means.		30.588	31.9	31.6		33.0	35.6	26.6	36.5	26.0	0.005	
We. 24		30.436	37.0	36.8	N. W.	33.3	37.4	25.6	45.0	25.9	—	
Th. 25		30.578	34.6	34.5	N. W.	38.0	38.4	36.7	38.4	26.8	0.016	
Fri. 26		30.516	30.4	30.3	E.	33.3	31.6	36.5	34.6	29.0	—	
Sat. 27		30.446	27.5	27.0	S.	33.0	35.0	35.6	31.5	21.5	0.065	
Sun. 28		30.116	46.8	46.4	S. W.	38.1	32.8	27.5	52.4	25.1	0.085	
Means.		30.418	33.2	33.0		33.1	36.0	26.8	41.4	25.3	0.116	

REMARKS.

- 17th.—Fine bright morning, sharp frost; overcast by noon; very misty rest of the day.
 18th.—Fair day, and warmer; fine evening.
 19th.—Thick white frost, clear fine morning; slight drizzle 3 P.M.; misty damp evening.
 20th.—Morning fair with slight frost, afterwards cloudy but fair; on the whole a pleasant day; colder in evening.
 21st.—Sharp frost in morning, and more or less fog all day; air very damp; warmer at night.
 22nd.—Damp and drizzly morning; fine from noon to 2 P.M. with bright sun; fog in evening, and very dense from 9 P.M.
 23rd.—Damp overcast day; slight fog all day, and thick fog at night.
 The week, like the previous one, has been remarkable for very high barometer, low temperature, small rainfall, and frequent fog.
 24th.—Fair day; much clearer, bright sunshine at noon; clear fine evening.
 25th.—Dense fog; clearer after 8 P.M., higher temperature.
 26th.—Fair day, but quite overcast.
 27th.—Fine throughout, sun shining for some hours, but with little heating power; moonlight evening, and warmer than during the day.
 28th.—Rain during the night and slightly in morning, damp but free from fog; fresh south-westerly wind during the day; slight rain after 9 P.M., much warmer.
 With the arrival of a fully developed Atlantic storm on the night of the 27th the temperature rose rapidly and the frost departed.—G. J. STMONS.

COVENT GARDEN MARKET.—DECEMBER 31.

THERE has been no real business done in our Market since Christmas, and prices remain without alteration.

FRUIT.

	s.	d.	s.	d.		s.	d.	s.	d.
Apples.....	1	10	0	0	Melons.....	each	0	10	0
Apricots.....	dozen	0	0	0	Nectarines ..	dozen	0	0	0
Cherries.....	box	0	0	0	Oranges	100	4	0	12
Chestnuts.....	bushel	12	0	16	Peaches	dozen	0	0	0
Figs.....	dozen	0	0	0	Pears, kitchen.	dozen	0	0	0
Filberts.....	1b.	0	1	0	dessert.....	dozen	2	4	0
Cobs.....	1b.	0	1	0	Pine Apples ..	1b.	1	6	3
Gooseberries..	1sieve	0	0	0	Plums	1sieve	0	0	0
Grapes, hothouse	1b.	1	6	4	Raspberries ..	1b.	0	0	0
Muscats.....	1b.	3	0	0	Walnuts	bushel	0	0	0
Lemons.....	100	6	0	10	ditto	100	0	0	0

WEEKLY CALENDAR.

Day of Month	Day of Week	JANUARY 8—14, 1880.	Average Temperature near London.			Sun Rises.	Sun Sets.	Moon Rises.	Moon Sets.	Moon's Age.	Clock after Sun.	Day of Year.
			Day.	Night.	Mean.							
8	TH	Royal Society at 8.30 P.M.	41.0	30.8	35.9	8 7	4 7	4 35	0 23	26	6 48	8
9	F	Quekett Microscopical Club at 8 P.M.	41.3	30.8	36.0	8 6	4 8	5 52	1 14	27	7 18	9
10	S	Royal Botanic Society at 3.45 P.M.	42.0	30.3	36.1	8 5	4 10	6 57	2 23	28	8 37	10
11	SUN	1st SUNDAY AFTER EPIPHANY.	41.5	30.1	35.8	8 5	4 11	7 45	3 44	29	9 56	11
12	M	John Ray died, 1706, et. 77.	42.1	29.5	35.8	8 4	4 12	8 31	5 11	30	11 15	12
13	TU	Royal Horticultural Society, Fruit and Floral Com- [mittes at 11 A.M.]	43.0	29.3	36.3	8 4	4 14	9 47	6 35	31	12 34	13
14	W		42.1	29.9	36.0	8 8	4 15	9 7	7 57	3	1 11	14

From observations taken near London during forty-three years, the average day temperature of the week is 41.8°; and its night temperature 30.1°.

PEAS IN 1879.

NOW that seedsmen's catalogues are being distributed, it will not be inopportune to record my experience of some of the leading varieties of Peas, as, whatever value the information may possess, it will be certainly more useful to submit it just before seeds are ordered than just after. And here let me urge on those requiring a supply of choice varieties of wrinkled Peas to give their orders early. In consequence of the deficient harvest of many Peas last year, it is inevitable that those growers who are the latest in ordering seeds this spring will be disappointed, for it is certain that the stocks of several varieties will be exhausted in a very few weeks from the present date. It is the rule, I think, of all the chief seedsmen to execute the orders in the rotation in which they are received; therefore, those who have their seed lists on the vendors' file the first will stand the best chance of obtaining what they require.

The past year was far from being favourable to the growth of Peas, at all events in Essex; the weather was much too dull and wet to suit our rather rich and deep soil, resting as it does on a clayey subsoil. As a rule we have much too little rainfall for our Peas, and we selected and prepared our coolest quarter accordingly, the consequence being the comparative failure of those varieties possessing weak constitutions. This applies more especially to the sowings for the main and latest supplies, the earliest and successional varieties being on the whole unusually productive, and also of excellent quality. The experience of last season has more than ever demonstrated the value of the taller-growing and most vigorous varieties, they alone being able to make headway during the greater part of the season; and consequently much as we may admire the dwarf varieties, they must not be depended upon to keep up an uninterrupted supply either in wet or dry seasons.

Of early round-seeded varieties Caractacus proved to be the best; it is of sturdier growth, quite as productive, and bearing larger pods than either Ringleader, Sangster's No. 1 (which is largely grown for the markets), and Dickson's First and Best. Only a very few days behind these was a new variety sent out, but not correctly, I am informed, as Harbinger (Laxton), and, as this is so much superior, will be grown in preference to either of them. It is a white wrinkled Marrow resembling The Shah, but is larger and superior to that variety. Harbinger grows about 3 feet in height and is very productive, being, in fact, one of the very few varieties that really produce pods from the bottom to the top of the haulm. William I. was again remarkably good. Two sowings were made, one on a warm border the other in the open, and the latter, although sown after the former were up, came into bearing a week only behind them. Laxton's Unique, a dwarf, early, wrinkled variety, proves very useful, especially for planting out from pots into frames and at the base of a south wall. The only other dwarf, but not early, variety grown was Carter's Stragem, a remarkably fine new Pea much in advance of

any dwarf variety, and for size of pods and peas unsurpassed by any Pea that I am acquainted with. It promises to be a valuable acquisition. It is well adapted for growing without stakes, but is better with them. Last year it was scarcely 2 feet in height, very productive, and the peas were of the first quality.

Following closely on the early varieties we had Culverwell's Telegraph and Carter's Telephone, both yielding heavy crops of fine well-filled pods, and proved excellent and useful Peas, none more so last season. I am pleased to find that much better qualified judges than I ever pretended to be have certified that these varieties are undoubtedly quite distinct and are alike good. I will, therefore, only remark that where the preference is given to a rather mealy Pea, Telegraph should be grown; but if a sweeter and more tender Pea is preferred, by all means grow Telephone. Huntingdonian, although much above its average in height (in common with all the tall-growing varieties), was again remarkably good, and formed a capital succession to the two last mentioned varieties. No variety fills its pods better, nor surpasses it in quality. Dr. McLean, Carter's Challenger, and Little Wonder were gathered much about the same time, but the latter only of the three sustained its well-known reputation, the others, in common with nearly all the medium-height varieties, being much shorter than usual, mildewing badly. Little Wonder, however, grew to its average height—viz., 2½ feet, and gave an abundance of handsome pods well filled with delicious peas. Sharpe's Invincible was a comparative failure; those pods that did come to perfection were large and well filled with fine green peas, but its constitution was not proof against the season. It was advertised as being "but little liable to the attack of mildew," ours mildewed very badly.

Next in the order of succession came Marvel (Laxton), which although sown at the same time as Veitch's Perfection was ready for use some days before that variety, and in some respects is superior to it, the pods being much larger; it is also dwarfier, very prolific, and of excellent quality. Veitch's Perfection, however, was less affected by the inclement weather, and on the whole is yet one of the very best Peas in existence. Hooper's Incomparable Market gave an almost inexhaustible supply of a very fair quality, but is most inconsistently named, as it grew fully 8 feet in height, and medium-height Peas only are grown for markets, no stakes being used. Culverwell's Prolific is a good and attractive-looking variety, useful for the main crop, as also is Williams' Emperor of the Marrows, which keeps in bearing longer than the majority of varieties. This, too, grew to a great height. Criterion (Standish), may be described as a somewhat early form of Ne Plus Ultra. Another good variety, evidently of the same type, the Duchess of Edinburgh (Sutton's), succeeds well as a main crop variety during both wet and dry summers. Omega (Laxton), a dwarf form of the Ne Plus Ultra, was a failure, but it is much liked by some and will be grown again. The Royal Berkshire Marrow (Sutton's), is, I am inclined to think, an improvement on Ne Plus Ultra, which it resembles, and is particularly good for the very latest crop.

We had it in bearing here till cut down by frost, and found it highly useful.

More care than usual will be requisite in sowing wrinkled Peas this year, especially those that are not well ripened; but I need not dwell on this subject, which is referred to in the short but important extract from Messrs. Veitch's catalogue on page 6 of the last issue of this Journal.—W. IGGULDEN.

PEDIGREE ROSES.

As some little confusion and misapprehension exists on this subject, and as I think Mr. Bennett in his circular about his own Roses "doth protest too much," I trust that a few remarks on the subject may not be out of place. The term "pedigree" is itself misleading. If I buy a pedigree cow I understand by it that not only do I know its father and mother, but can trace its descent for some generations; so if I buy some of Mr. Hallett's Pedigree Wheat I understand that it is the result of a selection which has been carried on for some generations. Richardson defines pedigree as "the degree or rank of forefathers, or the genealogy and lineage of forefathers." I need not say that there is nothing of the kind in those which are called pedigree Roses; they are simply the result of artificial instead of natural hybridisation. We do not talk of pedigree Geraniums or pedigree Auriculas, however carefully they may have been hybridised. If it is perfectly well understood that by the term pedigree is simply meant this all is well; but if it is intended to make it appear that they have some mysterious element in them beyond this, it is simply quackery.

It is now sixteen years since that I paid a visit to Mr. Ward at Ipswich, the raiser of John Hopper, and a few remarks which I made in the Journal of December 8th, 1863, will show, I think, how unfounded is the statement in Mr. Bennett's circular that he "first conceived the idea and struck out into an unbeaten path." I there stated amongst other things that not only was John Hopper the result of careful hybridising, but that there was "then going on a series of operations which will, I hope, if its owner is spared, yet produce something worth looking at, as they have already produced one of the very best—next to *Devoniensis* the best—of English-raised Roses." It is curious, too, that in reference to some of Mr. Bennett's expectations to read the following: A small tree of *Gloire de Dijon* was nailed to the front of his house. Most people would have passed it by and thought it hardly worth notice, but to Mr. Ward and the Rose-lover there was much to look at and speculate about—viz., two well-swellled hips hybridised with one of the best dark Hybrid Perpetuals. Imagine what a sensation a deep-coloured Tea Rose or a yellow Hybrid Perpetual would make. And yet once again I stated, "During the progress of his experiments in hybridising some curious facts have come under Mr. Ward's notice. Thus he hybridised *Noisette Lamarque* with *Prince Leon*, H.P. Of the produce of the cross one came perfectly single, of the colour of *Lamarque*, most vigorous in habit, but of course perfectly useless. Then, again, he had planted against a wall *R. bracteata*, *Fortune's Yellow*, and other varieties of Roses, but he has never succeeded in his crossing with them. Again, he has found that it is never of any use hybridising semi-double flowers, for they will never produce really double flowers." No wonder that Mr. Ward after all this may well say he is amused by Mr. Bennett's statement about his striking out into an unbeaten path; and that while he says, "I admire Mr. Bennett's enterprise," his enthusiasm has led him into error respecting his new field and *modus operandi* secret; and when he says no good Tea Rose has hitherto been produced in this country 'except by my process,' and which self-interest compels him to keep a secret, I may just say at the present time I have fertilised pods of seed on the best Tea Roses measuring over 3 inches in circumference. In this Dr. Denny will bear me out, as he has seen them."

Mr. Ward continued his efforts for some years, and sent out Mrs. J. Berners, Ipswich Gem, and Mrs. Ward, but none of them equalled John Hopper, and for some years he had abandoned it; but about three years ago he writes to me: "I began again. The result has been most satisfactory. At the present time I have a most promising batch of seedlings, and still more so of seed of this year. Thus I have splendid pods of seed that I can guarantee are properly fertilised, as *Climbing Devoniensis* × *Madame Victor Verdier*, *La France* × *Solfaterre*, *Madame Celine Noirey* × *Madame V. Verdier*, *Madame V. Verdier* × *Solfaterre*, *Prince C. de Rohan* × *Solfaterre*,

Victor Verdier × *Solfaterre*, *John Hopper* × *Solfaterre*, *Baronne de Rothschild* × *Solfaterre*, *Souvenir de la Malmaison* × *Solfaterre*, *Gloire de Dijon* × *M. Victor Verdier*, *Jules Margottin* × *Solfaterre*. In 1879 I crossed *Baronne de Rothschild* with *Sombreuil*, Tea; this has produced a good light variety which I have named *Isabella Ward* after my daughter. The flower in its first stage is delicate flesh, but when fully developed paler and much like the colour of the old *Maiden's Blush*. The foliage distinct from any other Rose, very dark green, wood very spiny, and of strong robust habit. I shall not send it out till it has been grown and shown properly. It is a free autumnal bloomer. The same year I tried an experiment with the old striped *Village Maid* upon *Madame Victor Verdier*; The result is one of the most effective Roses I have seen; the face of the beautifully cupped petals a glowing crimson, back silvery white, and will make a capital bedding variety. Another interesting cross of the same batch, *Jules Margottin* × *Madame Falcot*, produced a fine globular flower, pinkish red tipped or edged after the style of *Homere*, only a better shaped flower; growth distinct from any I have raised—a good pillar or climbing Rose, the foliage partaking of the Tea character, very glossy. *Prince Camille de Rohan* × *Madame Falcot* surprised me the most. I thought of getting a bronze H.P., but instead of which I had a light red. They are all climbers, exactly like *Gloire de Dijon*. This peculiar growth convinces me how little we know what habit of growth such mixture will produce."

I have thus allowed Mr. Ward to speak for himself. I have no wish in any way to decry Mr. Bennett's efforts; but I want to show, first, that in all his hybridising he has been anticipated by Mr. Ward, and that therefore honour should be given to whom honour is due; and second, that however he may think that the plants must have some peculiar treatment so as to enable them to produce seed, Mr. Ward declares that no such preparation is necessary, and that he can produce seed pods freely on pot plants, and less freely in the open air.

We may surely hope, then, that we are about to see a new start in Rose-growing, and I am sure that all Rose-lovers will welcome any fresh break; but hope too that they will insist that all new flowers should be submitted to due examination by competent authority before they are sent out, for thereby a vast amount of disappointment and vexation will be averted.—D., Deal.

NEGLECTED POINTS IN STRAWBERRY CULTURE.

AN announcement that Strawberries in some gardens are suffering from the severity of the frost leads me to inquire if some means of protection are not available for a fruit of such general value and utility. Some six hundred plants in pots plunged to the rim in leaf soil had some dry fern shaken lightly over them when the frost began, and the foliage pressed flat to the soil is now quite fresh and green. This was done with equal success last winter, and I see no reason why plants in the garden beds may not be treated in a similar manner. Here, in the south, plants growing in undrained tenacious soil are often killed in a wet yet comparatively mild winter from decay, and not from excessive cold. In the north, or in any bleak exposed situation, they are still more liable to suffer, and the fact prompts the inquiry, What cultural conditions are requisite to reduce the chance of damage from such causes to a minimum? Thorough drainage, and such a plentiful admixture of coal ashes with the soil as to render it impossible for it ever to become water-logged, are conditions which experience shows are applicable to all soils of a heavy nature, or which are so deficient in gritty matter that superfluous water will not pass quickly through it. A free, light, open, generous soil, such as a privileged few find ready to their hands, but which all may imitate sufficiently well for the purpose.

To secure such desirable mechanical division of the soil preference is given to coal ashes, not only as the most available hard substance for every householder, but as combining the desirable property of sustenance and drainage. I very well remember when Sir Harry was sent out seeing some sickly plants of it in a border of heavy soil which had produced runners that had rooted into a path of coal ashes, and were as green and flourishing as could be wished, in striking contrast to the pallid hue of the parent plants. That was a hint from Nature, gladly taken and applied to subsequent practice with most satisfactory results.

Another point of considerable importance in Strawberry cul-

ture is the adoption of every means for the prolongation of the fruiting season. The plants plunged in leaf soil will, at the end of February, take the place now occupied by Violets in an unheated Peach house, and will afford a supply of ripe fruit three weeks before the garden beds, thus forming an admirable connecting link between them and the forced plants in the vineries. There should also be a bed of Black Prince on a raised bank sloping to the south in as sunny sheltered a spot as can be had, to give fruit at least a week before beds on a flat surface. Such Strawberry banks used occasionally to be met with, but I fear they have become obsolete, and yet so simple a means of accelerating the ripening ought not to fall into disuse. It should not be forgotten that the fruit of old plants is so much shaded by the dense mass of foliage as always to be later in ripening than that of young plants. The earliest ripe fruit I have ever gathered from open beds was from plants about eleven months old, planted in permanent quarters in the form of strong-rooted runners early in August. Such a bed made at that time annually upon a bank of rich soil is very useful. It is probable the disappointment caused by old plants and exhausted soil has brought raised beds into bad favour.

Late beds should also have special attention. Who ever saw a Strawberry bed on a north border? Why not? We have only to take care that the soil is in sound condition before planting. Let the plants be well above the common level, say 3 inches, use a slight covering of fern in winters of exceptional severity, plant late varieties, and we extend the fruiting season a fortnight later. I have had excellent fruit from such a border late in August, and I can commend the plan for gardens south of the Trent. What say gardeners farther north? In old gardens it is not uncommon to see an occasional old Apple or Pear tree with a huge spreading head much complained of for the space it occupies; give the soil beneath its branches a heavy dressing of manure and ashes, plant late Strawberries right up to the stem, and instead of complaints there will be expressions of pleasure at the excellent supply of late Strawberries obtained by thus turning the shadow of its branches to account. —EDWARD LUCKHURST.

MARÉCHAL NIEL ROSE CANKERING.

"WINCHMORE," on page 10, says he has tried Maréchal Niel on almost every known stock but without success. Has he tried it on the de la Griffierie? I am afraid by what he says that he has not. I have seen this beautiful Rose grown on many different stocks, such as the *Félicité Perpetuée*, *Margottin*, seedling *Briar*, *Gloire de Dijon*, and several others, but the de la Griffierie stands first in my estimation. I have seen the Maréchal on this stock throw up shoots 8 to 10 feet long, and as for cankering I have no reason to think it will do so. The buds are so firmly united to the stock that it is a difficult matter to pull them out.

In looking over Messrs. Wm. Paul & Son's nurseries at Waltham Cross I observed hundreds of Maréchals on the de la Griffierie stock, and it was astonishing to see the growth they had made in one year—three or four shoots 6 to 8 feet long. I noticed also such varieties as *Gloire de Dijon*, *Climbing Devonensis*, *Belle Lyonnaise*, *Madame Berard*, *Mdlle. Marie Berton*, and *Cloth of Gold* growing on this stock with remarkable vigour. I strongly advise "WINCHMORE," and all others who find it difficult to grow this king of Roses to give it a trial on the above-mentioned stock, and I am sure they will be well rewarded for their trouble.—QUILLO.

VEGETABLE SEEDS FOR SMALL GARDENS.

I SEND a list of vegetable seeds, a copy of one furnished to a lady whose kitchen garden is about an acre in extent. It may be of use to those who have small gardens and who wish to furnish them as cheaply as is consistent with good quality in the produce. Peas.—One pint Ringleader, one pint William I., one quart Princess Royal, one quart Veitch's Perfection, one quart Hairs' Dwarf Mammoth. Beans.—One pint Seville Longpod, one pint Broad Windsor; French Beans.—One quart Negro Longpodded; Runner Bean.—Half pint Scarlet Champion. Beet.—One ounce Dell's Crimson. Broccoli.—One packet Veitch's Self-protecting Autumn, one packet Veitch's Spring White, one packet Leamington, one packet Cattell's Eclipse. Brussels Sprouts.—Half ounce Scrymger's Giant. Cabbage.—Half ounce Nonpareil Improved. Carrot.—Half ounce Early Nantes, two ounces James's Intermediate Scarlet.

Canliflower.—One packet Early Snowball, half ounce Early London, one packet Autumn Giant. Celery.—Sandringham Dwarf White, one packet Major Clarke's Solid Red. Endive.—Half ounce Batavian Round-leaved, half ounce Green Curled. Lettuces.—Half ounce All the Year Round Cabbage, half ounce Hicks' Hardy White Cos. Onion.—Half ounce White Lisbon, half ounce Queen, two ounces Brown Globe. Parsley.—One packet Fern-leaved. Parsnip.—Half ounce Hollow-crowned. Radish.—One ounce French Breakfast, two ounces red and white Turnip mixed. Savoy.—Half ounce Dwarf Green Curled, half ounce Drumhead. Spinach.—Half pound Round. Turnips.—One ounce Snowball, half ounce Chirk Castle Blackstone, half ounce White Dutch. Tomato.—One packet Hathaway's Excelsior. Vegetable Marrows.—One packet Short-jointed Long White. Potatoes.—Half peck Veitch's Royal Ashleaf, half peck Myatt's Ashleaf or Mona's Pride, one peck Dalmahoy or White Don.

These are all vegetables of established reputation, whilst the cost is moderate. In the Potato item a late supply is not counted on; and with regard to the supply of greens, many would add half an ounce of either Scotch Kale, Cottagers' Kale, or Sprouting Broccoli to the list. Of almost as much importance as securing reliable seeds is the matter of sowing. For example, Peas should have a wide drill drawn or a trench thrown out about 9 inches in width, and the seed scattered evenly over the whole breadth and about 4 inches between the Peas. Beans of all kinds should be sown from 9 to 12 inches apart. Beet and Parsnips should have a few seeds—three is sufficient—put in about a foot apart in the rows. Spinach is another vegetable which may be sown in the same manner, only 9 inches is sufficient for it. The early Carrots may be sown with the main crop of Onions, the main supply being mixed with dry sand and sown very thinly. Turnips are generally sown too thickly. The Ashleaf Potatoes should be well sprouted before planting, as they have a tendency to remain dormant when placed in the ground before it is seen which buds will grow.—R. P. BROTHERSTON.

HOW I GREW MY AURICULAS.

CONTINUING my remarks from page 6 I will briefly refer to a few points in the culture of these beautiful flowers.

POTTING.—This is a very important operation, necessary to the well-being of the plants, and some growers, I fear, are somewhat careless about the work. The pots should be very clean, and plenty of crocks should be carefully placed in them; then a few rushes cut in $1\frac{1}{2}$ inch lengths placed over them, to prevent the soil from filling up the crevices. When this is done fill in the soil, forming a cone at least 1 inch above the level of the pot. Place the plant on the top of the cone and carefully spread the roots all round, which done fill the pot to within half an inch of the rim, and with a piece of wood make the soil firm. When there is rain the soil will run into the space and the water will reach the roots, whilst if the soil were level with the rim of the pot it would run off, and the plants would be destitute of moisture.

BLOOMING.—In the spring when the truss is showing it will be necessary to protect it from too much moisture. For this purpose nothing is better than a stick 18 inches or more long, similar to the bottom end of a Carnation stick; which, after having a nick sawn the thickness of the glass, the glass can be placed in it, the glass to be at least 6 inches square, and this placed over the plant will prevent rain or too much damp, and can be left to the open air without fear of harm. The truss must be thinned to the number of pips required. At no time be niggardly of air, as the Auricula luxuriates in a good healthy atmosphere. Some growers have adopted a new plan, which may in some degree be beneficial, but only partially. They make a frame like a span-roof greenhouse, but open at the sides all round about 3 feet high, the roof being of glass. This does not answer any better than the plan which has been practised for about 120 years, and which is strictly followed to this day. Modern growers have a conceit about their own system. It must be observed that little improvement has been made during that time and few varieties raised, notwithstanding such great pains have been taken in sowing good seed.

SEEDING AND SEEDLINGS.—Seed from many varieties is difficult to obtain, and even then the results are far from cheering. I laboured many years without raising anything worth notice. I well remember one year gathering some very fine pods from Leigh's Colonel Taylor, green-edged, and sowed it, and was afterwards told that others had done as I had done; but,

singular to state, that although two hundred plants were raised from this green-edged variety there was not a single Auricula in the whole lot. All proved selfs, and from this I presume there is a greater tendency in the Auricula to retrograde to the original state.

DISEASE.—There is a disposition in the Auricula to become diseased, which I think arises from being overgrown in very strong composts. As soon as a plant shows that it is growing crooked it is then high time to remove the plant some distance from the general stock, or else others will become diseased also. If there should be canker in the stem it should be cut out with a knife, and scraped so that not a particle of the canker can be seen. After this is done soften some beeswax, so that the wound made can be filled up with it, and by so doing there is a probability of saving the plant.

REMARKS.—I have never heard of bone dust being used in the compost for Auriculas, but I feel persuaded that it would prove advantageous, and would be better for the plants than either cow or horse dung. It would be worth trying on a small scale, and I should be glad if the result were made known to those interested.

I have thus briefly noticed what I think will conduce to having healthy plants; and if any serious omission has been made I hope some allowance will be made for a cultivator who in a few days will be eighty-two years of age.—JOHN SLATER, *Cheadle*.

PEARSON'S GOLDEN QUEEN GRAPE.

I WAS delighted to see the remarks of "A KITCHEN GARDENER" upon this Grape in a recent issue. My experience of it is also most favourable. I bought of Mr. Pearson in the autumn of 1875 a young Vine and planted it inside a warm vinery with Black Hamburg, Muscat of Alexandria, Dr. Hogg, and Madresfield Court in the spring of 1876. I took one bunch from it in 1877, which was good. In 1878 it bore six bunches, some of them 14 inches long. This year I have cut from it ten bunches, all of good size, well coloured, and extremely luscious. Many berries measured $1\frac{1}{4}$ inch long and 1 inch wide. I cut the last bunch a fortnight ago, as I cannot keep the house sufficiently dry for late Grapes. I have sent bunches of the Golden Queen as presents to several first-rate judges, and their verdict has been uniformly that "it well deserves its name." It grows so vigorously, is so prolific, and sets so well, that I think it is worthy of very extensive cultivation.

While on the subject of Grapes, which, by-the-by, is my great "hobby," it much surprises me that the complaints are so constant of "cracking" in that fine Grape Madresfield Court. I have grown it in the same vinery as Golden Queen and the others before mentioned, and during the whole of my experience have had only one cracked berry, and that from a slip of the scissors in thinning. The bunches have been from 2 to 3 lbs. each; the berries very large, last season (1878) all well coloured, and this season well coloured considering the absence of sunshine and continued wet weather. A well-known gardener who has "won his spurs" at all the leading fruit shows in town and the provinces, told me "they were the best he ever saw grown." At the critical time, just before they commence colouring, I keep the air rather dry and allowed the laterals to extend until the Grapes have fairly shown colour. To this I attribute my success in preventing "cracked berries." Why do we hear so little of Dr. Hogg Grape? In my opinion it is the most delicious early white Grape that is grown. It does well with me, and is very prolific.—NORTH DEVON.

FLOWERS IN MIDWINTER.

PLANTS of any kind to bloom at Christmastide are often inquired about, and always interesting. When these are of the most lovely description the treat enjoyed is always enhanced. Such a treat one is sure to have at all times when visiting Mr. Gough's choice collection at Birdhill, Clonmel, but especially at present, when there is necessarily such a dearth of flowering plants, not merely outdoors, but within. The following are a few notes made when visiting the stove and greenhouse and the very choice collection of Orchids.

Poinsettia pulcherrima.—This deserves special and primary notice. Some of the finest plants were propagated from cuttings in spring and early summer, and carefully and slowly grown onwards; but plants two years old cut back in 10-inch pots were magnificent—fully 5 feet high, and with

great bracts of the most intense colour, scarcely one head when measured being less than 15 inches in diameter. Mr. Loneygan, the gardener, employs them for brightening the conservatory and stove; such flowers, lasting for nearly three months in the dull season, are invaluable. The double variety, or single, rosea carminata, is not so much prized here.

Euphorbia fulgens (*jaquiniaeflora*).—This plant is included in the same natural order as the last and is scarcely less brilliant, and, like the last, some of the finest specimens here have been produced from cuttings taken last spring. They are blooming finely in a temperature seldom exceeding 65°, but would continue in flower in a conservatory or drawing-room unheated by artificial means. Time and circumstances being appropriate, one can hardly imagine anything more graceful than a flower spray of this used as a wreath or to decorate the ball-room. As the flowers are produced on the extremity of long stems, taste of arrangement so as to hide the barer portion is necessary.

Of the few white flowers now to be seen, not including Stephanotis and Camellias, none are more welcome than *Clerodendron Balfourianum*. They are constantly produced, and extend over a long period. Evidently the training and pruning received here suited the habit of the plants. Before I note the Orchids in flower I should like to specially refer to the collection of new and rare Celseas; and, as indicating the minimum temperature suitable for them, I remarked that those in the stove and forcing house were growing finely and the colours coming out well at 65°, while those at 50° in the conservatory were losing ground fast. Very beautiful spikes of bloom were being thrown up by *Aphelandra Roezlii*, and some handsome seedlings of Suttons' *Gloxinia crassifolia* were still blooming; while such foliage plants as *Dracenas*, *Crotons*, *Gesnera zebrina* intermixed with really fine plants of *Adiantums*, especially *A. farleyense*, combined to produce an imposing effect. *Todeas* and *Trichomanes* in cases and alcoves are always healthy and interesting.

Among Orchids Mr. Gough would seem to give a precedence to *Odontoglossums*. The collection here is large, and *O. vexillarium* seems most prized, and not undeservedly. The specimens are young and making fine growth. Attention to cleanliness, and moisture, and coolness go a long way towards success, and Mr. Loneygan seems to think so. *O. Uro-Skinneri* appears to be flowering at all times. *O. bictonense* and *O. Inaleayi* are showing fine flower spikes. *O. Alexandræ* and *O. grande* are also developing fine foliage and blooms. *O. Inaleayi* resembles the last-named, except that the flowers on the upright spike are browner and more finely tinted yellow. *Lycaste Skinneri* does well here with cool treatment and is now flowering finely. The pseudobulbs must, however, be regularly moistened; they would do well then in a parlour or drawing-room. *Masdevallia Veitchii*, like many *Dendrobes* and *Odontoglossa*, Mr. Gough grows in what may be called the vestibule of the stove, and with cooler treatment. The flowers are several inches in diameter, and are of the most intense orange scarlet. This is said to be the best of the genus. *Phalænopsis Schilleriana* is one of the most desirable of all Orchids on account of its distinct nature, beauty of flower, and length of time it continues in bloom.—W. J. M.

LANGFORD PARK, ESSEX,

THE SEAT OF H. J. BARRETT, ESQ.

IN offering a few remarks on this excellently managed garden I will only refer briefly to the kitchen garden and pleasure grounds, as the houses command primary attention. The houses occupy a large space in the walled-in garden, of which the remaining portion is planted with fruit trees and bushes, such as Apples, Pears, Raspberries, Gooseberries, &c. The walls are covered with healthy trees of Pears, Plums, Apricots, and Peaches. The last named have been covered with glass. The kitchen garden is well stocked with winter vegetables, but no doubt all will be wanted as the demand is large. The pleasure grounds are of rather large extent and command a pleasant prospect to the south. There is no formal flower garden, but several large beds which at the time of my visit were planted with the common winter and spring bedding plants, *Myosotis dissitiflora* being largely used. Two large *Camellias* planted out are in excellent health, and stood last winter's severe weather well and flowered abundantly in May. Near to them is a bed of *Liliums* which are very brilliant in August.

The conservatory is a large span-roofed structure with staging

in the centre and round the sides. Primulas are largely employed, also Cinerarias, while Zonal Pelargoniums were very gay; the trusses are large and prove invaluable as cut flowers. Along the top of the centre stage a number of large Orange trees are arranged, forming a pleasant contrast to the mass of flower below. Climbing plants are trained to the roof, the most noticeable being *Lapageria rosea* and *L. alba*; both are in excellent health and are flowering in profusion.

The Peach house is of the same size as the conservatory. Chrysanthemums were arranged in lines down the centre. They were strong and healthy, and are bearing good flowers. This is an excellent way of showing them, as the plants are too tall to show the flowers to advantage if placed on a stage. The Peach and Nectarine trees are trained to wires on both sides of the house, and two lines of standards are planted in the centre. The trees are in excellent health, the wood being strong and well ripened. The varieties are Royal George, Grosse Mignonne, Noblesse, Late Admirable Peaches, and Lord Napier Nectarine. *Diospyros Kaki*, a Chinese fruit tree, is growing on one end of the house, but has not fruited yet. The vineries are 60 feet long by 18 feet wide, with a division in the middle. The Grapes were all cut from the first house; the wood is strong and well ripened. The varieties in this house are Buckland Sweetwater, Black Hamburgh, and Muscat of Alexandria. In the adjoining house were some excellent Grapes of different varieties, but Lady Downe's Seedling was the best. The bunches are fine for table use, and the berries and bloom beautiful. There were also some handsome bunches of Bowood Muscat, Black Alicante, Victoria Hamburgh, and Black Hamburgh. Rather close stopping is practised here; the shoot is stopped at the first or second leaf, and all after-growths are rubbed off. Mr. Hinton the head gardener does not think that this practice diminishes root-action, while the berries swell-off much better than when the Vines were allowed to make so much wood and leaves. The condition of the Vines and the fruit they are carrying speak well for the practice.

In the Orchid house a collection of fine healthy plants are arranged. Plants of *Calanthe vestita* were bearing four spikes each. That useful Orchid *Dendrobium nobile* was flowering well, also *Cypripediums*. Specimens of *Laelia anceps* had about seven spikes each. *Lycaste Skinneri* had nine beautiful blooms, and *Cymbidium sinense* three spikes. A number of *Cattleyas* will soon be in flower, also other good Orchids. The plant stove is a large span-roofed house 60 feet long by 25 feet wide. This is tastefully decorated with flowering and foliage plants. *Poinsettias* and *Gesneras* have a rich effect. Plants of *Eucharis amazonica* are producing flower spikes in profusion. *Crotons* appear clean and healthy. Climbing plants are trained along the roof. *Stephanotis floribunda* grows and flowers freely. *Ipomæa Horsfallii* was flowering well at the time of our visit. *Bougainvillea glabra* is a mass of flower all the summer. It is pruned close back like a Vine in the autumn. This fine and well-kept garden reflects great credit on the skilful gardener Mr. Hinton.—G. HILTON, *Great Totham*.

ESTIMATES OF EARLY PEARS.

IN growing Pears the first point, I think, to be considered is quality; and some Pears are so good that they ought to be grown in every garden, even though, as is often the case, they are shy bearers. The next point to be considered is quantity. Many Pears, though only second-rate in quality, are such regular bearers and vigorous growers, that on this account they ought to be planted. A third point is appearance. Some people who never eat Pears like to see a dish of handsome fruit on their tables. Now I propose to mention the varieties which unite two at least of these qualifications, if not all.

I have grown for some years more than a hundred varieties of Pears; and perhaps the best way in which I can put the case would be to imagine that I was about to begin again *de novo*, with the advantage of my present experience, and mention the Pears I should elect to plant.

Now, to my mind the first real Pear is Williams' Bon Chrétien. There are several Pears which come in earlier; the best, perhaps, taking all points into consideration, is the Doyenné d'Été. I do not mention the Jargonelle, because it requires a wall; but Williams' Bon Chrétien varies considerably according to the stock on which it is grafted; here it is largest and most highly flavoured on the Quince. (I look upon the Souvenir du Congrès as merely a very large variety of the Bon Chrétien with a small portion of its flavour.) Next to

this I should name the Fondante d'Automne and the Louise Bonne of Jersey, both of which are much better here on the Quince than on the Pear stock, and then the Beurré d'Amanlis.

This would conclude the first division of Pears, which in an average season, if we are to have one again, would carry on through September and October. Next comes a much larger division, which will be alluded to in a future issue.—WILLIAM LEA, *St. Peter's Vicarage, Droitwich*.

BEURRÉ D'AMANLIS Pear with me near Manchester is not worth growing. The tree is a free grower and fruiter, the foliage dark green and glossy. The fruit is large, and when ripe of a beautiful golden colour. I am of opinion there are two varieties under the name in cultivation. I think ours is the true one, but regret I cannot send you an average fruit for identification. The fruit when ripe has a sweet yet unpleasant taste with scarcely any flavour.—M. A.

YOUR interesting notes and finely executed engravings of Pears induce me to send you a short note on the Pears here. Perhaps it may be as well to state that I do not consider Glamorganshire a favourable county for the high culture of this useful fruit—at least I have never seen Pears so large and generally fine about here as I have in other places. Probably some of the finest Pears in this county are grown at St. Fagan's Castle near Cardiff, and it would be interesting to have a few notes from Mr. Croasling on some of his best varieties. The soil here is clay top and bottom in some parts, in others free on the surface and gravelly underneath. Neither of these soils is the most favourable for Pear-growing, but we try to improve the situation by making stations for the trees with good hazel loam from old pastures. With one or two exceptions all our best Pears are produced on walls, and we find them bear as well or better on an east aspect than any other.

Of the earlier varieties which are under discussion now perhaps the best are Flemish Beauty—an undoubtedly useful Pear, and Beurré d'Amanlis, both of which produce fine fruit of fairly good but not exceptionally high quality. I can speak more approvingly of some later varieties when the proper time arrives for discussing their merits. Our situation is about two miles from and 50 feet above the sea level.—J. MUIR, *Margam Park*.

WITH the exception of the first two the Pears named below are growing here as pyramids. Jargonelle and Marie Louise are growing against a south wall. The latter gives us more fruit annually than the former, but no year during the past eight has either of them produced what I consider a full crop. The other varieties mentioned have only failed once (1878) to produce an abundant crop of fruit. The present season the trees were laden, but the fruit were much below the usual size. Williams' Bon Chrétien, all things considered, is the best autumn Pear in cultivation; Louise Bonne of Jersey and Marie Louise come next, and in my opinion the others in the order named—Beurré d'Amanlis, Beurré de Caplaumont, Beurré Diel, Beurré Hardy. These are the varieties that succeed best as early or autumn Pears here.—J. H., *Brayton, Carlisle*.

THE IRISH YEW.

I SHOULD be glad if any of your readers could give me information respecting the Irish Yew—the origin of its name, and the size to which it grows. My attention has been called to this subject from the fact that there is a magnificent avenue of these trees in our new churchyard. As this was planted in the year 1842 the trees are probably about fifty years old. There are thirteen on each side of the upper terrace walk. They are the most symmetrical and the largest I ever saw, and I have heard the same remark from many gardeners. They are all about 20 feet high, and quite remind one of the Cypress avenues in Italy. They were supplied, I believe, originally by Messrs. Lane, whose nursery is in this parish. I have had them hooped with strong wire twice at about half their height to prevent their breaking from the snow, otherwise their natural growth has not been interfered with. Last year, when there was a great deal of snow, they fell upon each other's shoulders, and formed a perfect cloister. By moonlight they are particularly striking. I should be glad to hear of any other specimens which can compare with them, and shall be pleased to welcome any of your readers who may like to look at them.—J. W. COBB, *Rector of Berkhamshead*.

[*Taxus communis* var. *fastigiata* was named the Irish Yew, as

it is also called the Florence Court Yew, because it originated from a self-sown seed in the garden of the Earl of Enniskillen at Florence Court, county Fermanagh, Ireland, in 1780. Its reputed height is 20 feet, but probably there are higher specimens, of which we will readily record particulars that are supplied to us.—EDS.]

VENN'S BLACK MUSCAT GRAPE.

In the second week of August last I cut my crop of very large and finely coloured and flavoured Grapes from a young Vine grown in heat, which all who saw and tasted were delighted with. The Vine had been and still continued producing bunches as is its peculiarity, and I determined to leave a couple of these on to see what would come of it, cutting off all the rest. The result is this: I had two richly flavoured, deep black, blue-bloomed bunches of Grapes on my table on Christmas day, this second cut being gathered about four months and a half after the first. I am one of those who do not believe this Grape to be identical with the old Muscat Hamburgh. The habit is different, and it never fails to colour extremely well, but it is otherwise with Hamburghs.—HARRISON WEIR.

NATIONAL ROSE SOCIETY'S PRIZES—STOCKS FOR ROSES.

I DO not know whether the National Rose Society's schedule for the next show is yet completed, but if not I would suggest through the medium of your valued paper that a class, say for six Tea or Noisette Roses, be formed for amateurs living within the London radius—viz., within eight miles of Charing Cross.

I shall be very pleased to give a cup value from two to three guineas for the second prize, and if two other gentlemen or ladies—lovers of Roses—will come forward and furnish the other prizes, I imagine the Society will be willing to form this class.

There is another question I would recommend to the discussion of your readers—viz., What advice are comparatively inexperienced amateurs to take when two such gentlemen as the Rev. Canon Hole and R. N. G. Baker, Esq., differ so materially in their opinions? The first-named gentleman says in his "Book about Roses" that the Manetti stock is of comparatively no use for growing show Roses, and that cut-backs are also of but little use. He strongly recommends the seedling Briar and Briar cutting as the best stocks, and says that maiden blooms are invariably the best, and should always be grown if showing is to be attempted.

In looking through Mr. Cant's (of Colchester) catalogue a few days since I observed an article on Rose-growing by Mr. Baker, which I at once proceeded to peruse; and, to my great surprise, read (in speaking of his Roses at Norwich) the following:—"In the first place my blooms were not the produce of dwarf maidens, but were all of them grown on cut-back plants (Manetti), most of which were five years old. It has long been my opinion, and every year tends to strengthen it, that the blooms from cut-back plants are superior."

My opinion is sought by many friends, more especially at planting time, as to what they are to buy, &c.; and I, since reading Mr. Hole's book on Roses, have invariably advised the use of the seedling Briar and Briar cutting stocks, objecting in all cases to the Manetti. What excuse am I now to give them after what Mr. Baker says for the extra expense my advice has put them to?—FREDK. G. OLIVER, *Thyra Grove, Moss Hall, Finchley*.

GALVANISED WIRE FOR GARDENS.

A CORRESPONDENT, "C. P. L.," requests information as to the injurious effects or otherwise that this wire has on trees and plants to which it is trained, and cites an instance where the wire has apparently proved injurious to certain climbing plants which assumed an unhealthy appearance; but on the wire being painted they at once resumed their wonted vigour.

Although we have employed galvanised wire extensively for a number of years for the training of fruit trees and ornamental climbers, and have not observed any injurious effects therefrom, yet we are aware that the experience of other cultivators who are entitled to our respect differs from our own, inasmuch as they have found the wire more or less injurious to trees and plants. We know that some galvanised wire is quite smooth, and some more or less rough; and we

have sometimes thought that when injury has resulted to the branches of trees in contact with it, it has been caused by abrasion consequent on rough wire having been employed. Mr. Simpson of Wortley, however, a good gardener and close observer, recently told us that he found it necessary to paint all the galvanised wire in use in the gardens under his charge, and that the wire was not rough before it was painted. The instance cited, too, appears conclusive that the wire employed was injurious. While we should not hesitate to use galvanised wire in future we shall still be glad to publish the experience of others, whether that experience coincides with our own or not, as the subject is one of considerable importance.

GROWING AND EXHIBITING ROSES.

I HAVE a few observations to make on Mr. Easlea's letter on page 4.

I never prune root or branch at the time of planting. A month or so afterwards I remove the top of the shoots, such green wood as is still bearing leaves.

I do not depend solely on manure dug in at the time of planting, but give a good dose every autumn, top-dress with soot, and water with sewage.

My stocks at 5s. a hundred are at least equal to those referred to by Mr. Easlea at 10s., judging from those which I have received (with Roses at the top), from Waltham Cross. I always take my gardener with me to Rose shows, partly for his pleasure, partly for my convenience.

May I ask, Why is the "true spirit of a rosewarrior" more evident in a gentleman who buys his Roses than in one who propagates them?

Why should a special manure for Roses be so much more costly than one for Turnips? I fancy the main ingredients are the same, yet (in the only list in which the price is quoted per weight), one costs £40, the other £12.—DUCKWING.

NEW YEAR'S NOTES.

AFTER weeks of almost unexampled intensity of frost accompanied by a heavy snowfall, a steady thaw set in here about 10 P.M. on the evening of the 26th ult. (Saturday), and continues up to this date (1 P.M. New Year's day). When the sun shines brightly, the wind blows softly if strongly. The grass has much more of a green than a brown tint, while along the borders where they had lain hidden underneath the deep snows may be found unscathed Primroses, Polyanthus, and Neapolitan Violets.

As to the condition of our Roses, it is, of course, impossible at present to say anything with certainty. Amateurs who were fortunate enough to plant early will thankfully remember that a whole month of still mild weather succeeded the first frosts which checked vegetation, and the newly planted Roses had fair resting time in their new quarters before the storms and frosts set in.

Birds had been remarkably scarce; they almost totally disappeared when the hard frost set in, and very few are to be seen or heard now after some days of open weather. They were very numerous in summer, and nested up to the middle of August.

Apples and Pears have kept better than usual, perhaps because they ripened so late. From a light and well-ventilated cellar we were using up to Christmas Apples which are only summer, or at latest early autumn varieties, but I am not sure of the names. Marie Louise Pears, Céline, King of Pippins, Mannington's Pearmain, and some later varieties of Apples are in beautiful condition and full of flavour now; but of all of these except the summer variety we have only small quantities. A light woollen covering was thrown over the fruit when the severe frost set in. The earlier Apples kept as sound and juicy as possible in very open baskets resting on something to protect them from the damp of stone slab or floor. The choicer varieties were stored singly and carefully on wooden shelves.—A. M. B.

NOTES AND GLEANINGS.

THE annual dinner of the HORTICULTURAL CLUB will take place, we understand, at the Club House on Tuesday next, the 13th instant, at six o'clock. The chair will be taken by Mr. John Lee, and a good attendance of the members is expected.

— IN the Orchid house at Kew there is now an excellent

display of *ANGELICUM*. One specimen of *A. eburneum* is particularly fine, bearing six long spikes of large flowers. Several plants of *A. eburneum* virens are also flowering well, but this variety is not nearly so attractive as the species. *A. sesquipedale* is well represented. Among other Orchids in flower we noticed the pretty *Masdevallia polysticta* and *M. peristeria*, both in good condition. The very distinct and attractive *Amellia africana* is bearing numerous flowers, the sepals and petals of which are thickly spotted with chocolate.

— **DEATH OF MR. E. W. COOKE, R.A.**—We regret to announce that Mr. Edward William Cooke, the Royal Academician, died on Sunday last, after a brief illness, at the age of sixty-eight, at his residence, Glen Audred, in the village of Groombridge, a short distance from Tunbridge Wells. Mr. Cooke, who was the son of that eminent engraver the late Mr. George Cooke, was born in London in 1811, and early developed a talent for art. This was sedulously encouraged by his father, who placed him under the tuition of the *elder* Pugin. With him he studied perspective and architecture, and then devoted himself to book illustrations, his principal efforts being directed to the illustration of botanical works, including among others London's "Encyclopædia" and Loddige's "Botanical Cabinet." During late years Mr. Cooke has devoted much time in improving his garden, and which he made one of the most picturesque in the county.

— **AN** extremely pretty little Fern for growing in a pan is *RHIPIDOPTERIS PELTATA*, a native of the West Indies. The fronds are diminutive, only a few inches in length, rising from a creeping rhizome; they are divided in a fan-like manner and of a bright green colour. The plant succeeds in fibrous peat and sand, either in a well-drained pot or shallow pan. The temperature of a tropical fernery suits it best.

— **WE** have received a copy of Mr. Shirley Hibberd's annual "THE GARDEN ORACLE," which embraces in its contents an almanack, useful tables for gardeners and planters, a copious calendar of garden work, lists of new fruits, flowers, and vegetables, and illustrations of the principal new horticultural appliances that have been introduced during the past year. It is a good shilling's worth, and will amply repay perusal.

— **AN** excellent black Grape is *WEST'S ST. PETER'S*, but it is much neglected. We lately saw Vines of this variety at Buxted Park bearing a heavy crop of large, handsome, tapering bunches, well shouldered; the berries large, of a fine deep black hue, carrying a bluish bloom that imparted an attractive appearance to them. It was very sweet and juicy, with a singularly rich and piquant flavour. But what adds so much to its value is the important fact, with a thin skin and tender flesh melting deliciously in the mouth, it keeps good for some months after New Year's day. It requires a brisk temperature to finish it well.

— **THE** following are the arrangements of the **ROYAL BOTANIC SOCIETY** for 1880:—Spring Exhibitions, March 24th and April 21st; Summer Exhibitions, May 19th and June 16th; Evening Fête, June 30th; Special Exhibition of Roses in pots by Mr. W. Paul, Waltham Cross, from May 5th to 12th. Mr. Anthony Waterer's Exhibition of *Rhododendrons* and Messrs. Carter's Exhibition of annuals will be held in June and July. The usual botanical lectures will be delivered on Fridays at 4 P.M. during May and June.

— **MR. JAMES MORRISON**, late foreman at *Dalketh*, has succeeded Mr. Kettles (whose death was recorded on page 465 of the last volume) as head gardener at *Archerfield*, the residence of Lady C. Nesbit Hamilton.

— **WE** have received parts iv. and v. of Mr. J. Britten's work on *EUROPEAN FERNS*, now being published by Messrs. Cassell, Petter, & Galpin. They contain well-executed coloured plates of *Davallia canariensis* and several species of *Cystopteris*, in addition to numerous wood engravings. The genera described are *Trichomanes*, *Hymenophyllum*, *Davallia*, and *Cystopteris*.

— **THE** seventh part of "GREENHOUSE FAVOURITES" includes the *Azalea* and *Clematis*, the culture of which is very elaborately but somewhat tediously detailed. The type and paper are of a more excellent character than the engravings, which are scarcely so good as might be desired. The two coloured plates accompanying this number represent two varieties of *Primula cortusoides* and a double-flowered variety of the *Pelargonium*.

— **A** CORRESPONDENT "RUS" observes, that in a recent list of serviceable Orchids that appeared in the *Journal* *COLOGYNE CRISTATA* was ignored, and further observes that he has a fine specimen which he finds very easy to grow. *Cologyne cristata* has frequently been referred to approvingly in our columns, and is one of the most useful Orchids in cultivation.

— **WE** have had submitted to us a sample of an *AMERICAN* POTATO named *ROBERTS' PROLIFIC*, the first importation of which, about three hundred barrels, arrived at the Borough Market, London, on Saturday last, consigned to Mr. Roberts, salesman at that market. The consignor, as may be seen by an advertisement in another column, is offering them to the horticultural public for trial in the gardens of this country. We have seldom seen finer tubers than those before us. They are large, well formed, clear in the skin, with few and very shallow eyes, and of a pure Lapstone Kidney shape, the flesh being yellowish white. Roberts' Prolific is an early variety, as is instanced by the growth made in the barrels, and which has of necessity been removed. The consignor recommends this Potato as a companion to Early Rose, and believes it will prove a serviceable and early variety.

— **WRITING** ON THE COLD IN LAST DECEMBER Mr. G. T. Gwilliam, F.R.A.S., 35, Lansdowne Crescent, Bayswater, observes—"Notwithstanding the mildness of the last four days the past month was the coldest December in London this century, and, in fact, since the year 1796. The mean temperature was 32.4°. The coldest Decembers in this century were: December, 1840, 33.3° mean temperature; 1844, 33.0°; 1846, 32.9°; 1870, 33.6°; 1874, 33.2°; 1878, 33.7°; 1879, 32.4°. There was frost on twenty-six nights last month; in December, 1878, on twenty-one only." And the same subject Dr. Allnatt of Cheltenham writes:—"On referring to a consecutive series of my meteorological observations for twelve or fourteen years, I find nothing approaching the continuous run of frigid temperature as that which occurred in the past December. I select seven days of the lowest mean registrations. They form a curious commentary on the vicissitudes of our English climate: On the 1st the mean temperature was 15.3° Fahr. below the average. On the 2nd, 21.0°; on the 3rd, 16.7°; on the 4th, 18.9°; on the 5th, 21.8°; on the 7th, 21.9°; on the 9th, 11.5°; and on the 11th, 15.2°; all below the average."

— **OUR** correspondent "T" communicates the following note relative to *DAHLIA COCCINEA*:—"I saw this beautiful single-flowered Dahlia in great beauty during the autumn; it produces a profusion of brilliant scarlet flowers 3 or 4 inches across, with the central florets golden yellow. It is stated in the "Botanical Magazine" that it was introduced from France by Mr. Fraser, nurseryman, Sloane Square, about 1802. It is valuable for planting in borders among shrubs and other places. Native of South America."

— **SOME** discussion has been raised as to the regularity of the proceedings of the *EPPING FOREST COMMITTEE* in the appointment of a Superintendent of Epping Forest, but a reference to what has actually taken place will at once show that there is no ground for further question on the matter. The Committee were summoned on Monday, December 8th, (amongst other business) "to elect a Superintendent of Epping Forest." This election had to be reported to the Court of Common Council, not—and here the misunderstanding has arisen—in the form of a recommendation to be adopted or otherwise by the Court, but as a record of what had been done. The Committee elected Mr. Alexander McKenzie, and duly reported such election to the Court on Thursday, December 18th. In the discussion which thereupon ensued it was stated as the opinion of both the Town Clerk and the City Solicitor that the Committee in reporting to the Court had done all that they were required to do by the Act of Parliament. The appointment has to be reported to the Ranger in like manner. Owing to the Lord Mayor having to leave the above Court the discussion was adjourned, but unless it can be shown that the Committee have not complied with the Act it is difficult to see what can come of any further discussion.—(*City Press*.)

GOOD PEARS.

HAD the proposed election of Pears been carried out in all probability *Fondante de Cuerne*, represented in the annexed engraving, would have had a low position on the list, even if it had obtained a position at all; yet it is one of the best of what may be termed September Pears when well grown, and

we are not aware that it is more capricious than other varieties, but succeeds well under ordinarily favourable conditions. As this Pear is not so well known as some others that have been alluded to it may be desirable to describe it. The fruit is medium-sized, obovate. Skin pale yellow, having the appearance of being blanched, like White Doyenné, smooth and strewed with very minute brown dots, so small as to be hardly visible, and with sometimes a patch of cinnamon-coloured russet on some part of its surface. Eye small and open, slightly depressed. Stalk about three-quarters of an inch long, very stout and fleshy, and inserted in a shallow depression. Flesh perfectly white, half melting, juicy, and

sweet, with very pleasant flavour and aroma. A superior Pear both in size and quality to Buerre Giffard, and ripens in September.

From the garden (south of England) from which our specimen was gathered the tree is found to be a great bearer, the fruit ripening gradually and slowly, and on that account is valuable. It succeeds admirably upon the Quince, and forms a compact and ornamental pyramid, and it also succeeds well on the Pear stock as a standard for orchard planting. Fondante de Cuerné is referred to approvingly in Messrs. Rivers' and Veitch's catalogues, and although not so extensively cultivated as some others it is worthy of being included in the

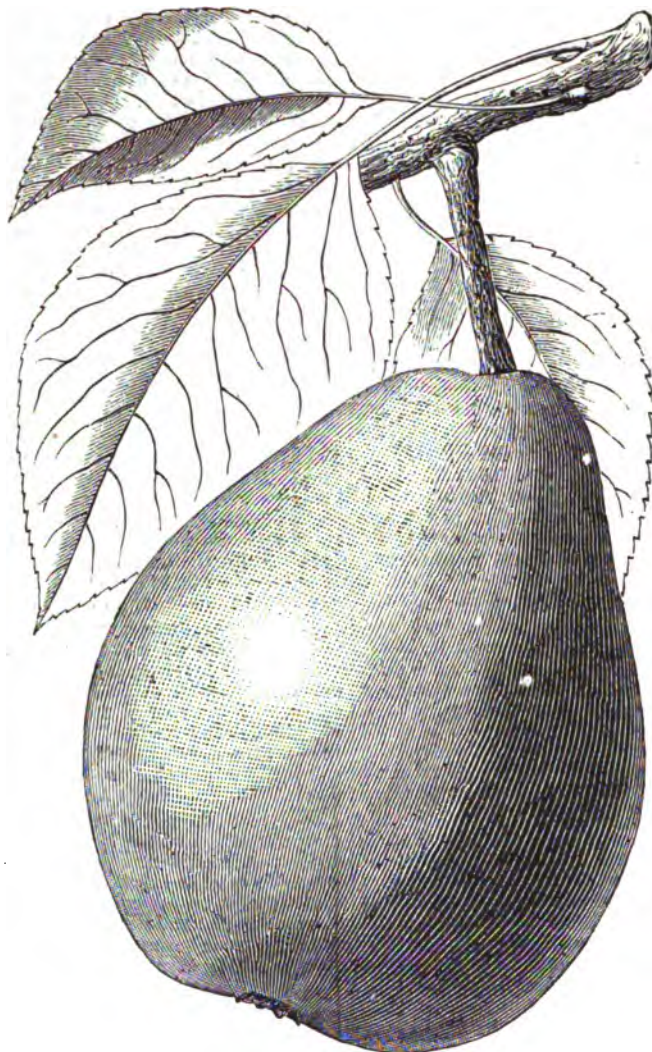


Fig. 5.—FONDANTE DE CUERNÉ.

section of Pears under notice. We have one other figure to publish, and shall then be glad to have estimates of September Pears from those who can submit them.

GRAPES WITHOUT FIRE HEAT.

WHEN I last wrote most if not nearly all my Grapes were hanging on the Vines in the cold vinery, but I was very hopeful of their ripening well, with one exception—that of the Madresfield Court; and in this I was not disappointed. As I anticipated also, the Artist was the first to ripen and colour exceedingly well, and the flavour was good. The Black Hamburgh (Frankenthal) came next, with the Muscat Champion "well up." Then came three very foggy days and nights, and then I felt that all was over, for I could not give air, for more damp came in, and I had no fire to cause an outward draught.

The third morning the Madresfield Court not only cracked badly, but were one mass of mildew with the exception of one or two bunches, and these I cut, but they were not over-sweet and lacked the Muscat flavour. What remained of the Artist began to be affected, so I cut them; and the flavour was good. Venn's Black Muscat stood well, coloured well, were good in flavour, but not strong in Muscat aroma. But to my mind the best of all was the Muscat Champion. It neither mildewed nor shrank, but the berries grew out a very fair size, and ripened well, and were good to the palate, though not rich in the Muscat flavour. This in the face of about ten hours of sun per week, and three days and nights of heavy fog, was much better than I expected. But, better still, the Muscat Champion ripened in the ground vinery even better than in the house, and I have come to the conclusion that is without doubt one of the very best Grapes for general cultivation in

existence; but people will not grow it because it is not black True; but it is a grand Grape in every other respect, and worthy of all praise.

I am having pipes put into the same house for the purpose of trying some experiments with heat on the same Vines, and another year I hope to give my experience. I am of opinion that many Grapes can be grown in the south of England in cold vineries, and grown well, and fine fruit ripened, but under such conditions it is far more difficult to grow them well than in a vinery where artificial heat can be applied when found necessary, and also in a cold house they want perpetual attention as regards sunlight and air; but when a fire is kept on this partially regulates itself, therefore there is much more credit in producing good fruit from a cold vinery than a warm one.—HARRISON WEIR.

P.S.—I forgot to mention that I left two small bunches of the Golden Champion on a little Vine in a ground vinery, and to my surprise both of them ripened and were of good flavour.

ASTILBES.

In the small genus of *Astilbes* we have a few plants that prove very serviceable under a variety of circumstances, especially because they are quite hardy and do not require so much care in their cultivation as many of the occupants of our borders. They thrive in ordinary garden soil, but require thorough drainage, and during their growing season they should be liberally supplied with water. They are well adapted for planting in open spaces in the shrubbery, by the sides of streams, and margins of lakes and ornamental water. They do not object to partial shade, at the same time they enjoy full sunshine, and when thoroughly established they are very attractive. They are increased by division, which is best done in the spring when growth is commencing.

Astilbe rivularis (japonica), the most common of the species, is an elegant plant from North America, useful for cut flowers. *Astilbe decandra* is not as well known as the previous species; it is also dwarfer in habit but equally as beautiful. Native of Carolina. Perhaps the best of all is *Astilbe rubra*, which is extremely attractive, but being more tender it requires protection in exposed places during winter. It grows from 2 to 3 feet in height, and should be in every collection of herbaceous plants.—VERITAS.

CYCAS REVOLUTA.

ANYONE who is a lover of beautiful plants must admire this very graceful Cycad. It is very easily grown, but requires many years to become a large specimen, and for a considerable time it may be said to be stationary, only increasing in length of stem as each tier of leaves develop. Stove heat certainly suits it the best, as in such an atmosphere fronds are more frequently developed. However, it succeeds well in a conservatory and moderately cool house. The most interesting period of this plant's existence is when it is producing its open fronds; they are of such a soft and beautiful texture compared with the old fronds. It is surprising how quickly they become fully developed. Indeed, considering the texture of the old fronds, one would not by any means expect such a quick growth. When very healthy, and in a good temperature the plants often produce a tier of leaves annually.

It is very singular that the *Cycas* will show an unusually large crown of fronds; but after a few weeks it will be plainly seen that large fronds will not be produced, but an enormous cluster or whorl of diminutive fronds not much larger than the palm of the hand. On the margins of these are formed ovules. During what may be termed the flowering period the air is laden with a very powerful odour suggestive of brandy toddy or Pine Apples. After this period during the summer these "seed leaves" continue developing and maturing ovules. Most frequently the ovules will be found to be imperfect.

These notes are written from observation of a plant in an English hothouse, and ovuliferous fronds (fig. 6) are herewith submitted to the Editors' attention. They are of this year's growth and fully developed. Four young plants have also been taken from the root of the fruiting specimen this spring, and are now being established. This fruitful plant also has graced numerous prize collections of plants at exhibitions.—M. A. C.

[The fruits in the annexed engraving are really imperfect seeds or ovules, which have a testa (seed-coat) of two layers, the outer red and fleshy, the inner crustaceous or stone-like.

Within these protective coverings is a quantity of albumen that serves as a store of nutriment for the embryo. However, in specimens similar to those represented and borne by the

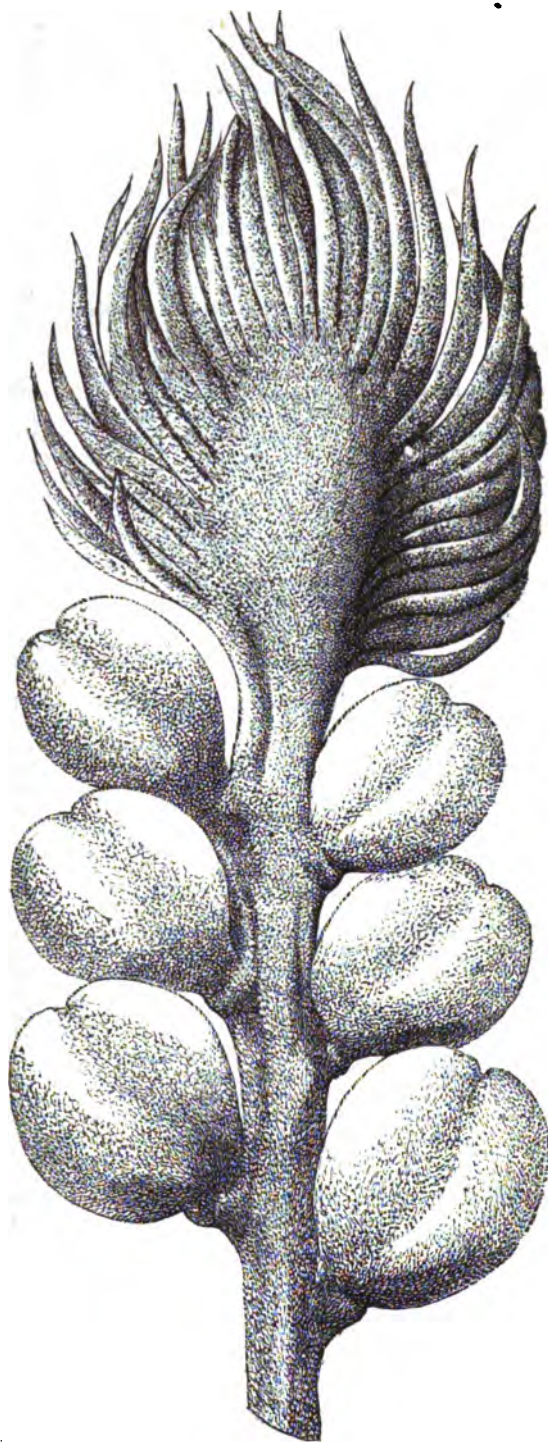


Fig. 6.—Ovuliferous frond of *Cycas revoluta* (natural size).'

same plant, we have been unable to discover the embryo, owing, no doubt, to the fact that fertilisation had not been effected.—EDS.]

CENTRADENIA GRANDIFLORA.—All the winter long I have admired the flowering of this beautiful stove Melastomad. It is well known in botanic gardens, and in most choice collec-

tions; but its value as a decorative plant does not seem to meet with due recognition. It makes an elegant table ornament, and cut sprays last quite a reasonable time. This is the finest species, both in flower and foliage. It has large bronze leaves, and each branch produces, in succession, a profusion of blossom. By inserting cuttings in February good specimens may be had for next winter. It likes a peaty soil, a moderate amount of root room, and occasional pinching to increase the number of branches.—L.

OUR WOODS.

I HAVE received so many kind notices of my article on woodland rides, that I am tempted to comply with a request made to me to write another article on our woods.

At a time of the year like this, when there are so few things which attract us out of doors, it is well to take advantage of any one which does so; and I am confident that many people are ignorant of the charm that lies in a ramble through well-kept woods. But this, perhaps, may not affect many of your readers, as so few landowners care to spend money on their woods. They look upon them as preserves for game only, or as sources of profit, where a hundred pounds may now and then be raised at the cost of an hour or two's walk, with a timber scribe in hand, marking the trees that have either attained their best stature and are now on the downward road, or else thinning out too crowded parts.

Very few care to drain their rides; and yet there can be no doubt pheasants do very much better in a well-drained wood than in a marshy copse. Woodcocks, it is true, like a sedgy swampy bottom, but this can always be left them. What we have to do is to drain the uplands and leave a small basin at the bottom to collect the water, and make a camping ground for woodcocks. Here, again, if money is no object, we can make a pond or small lake, which will do double duty, in that it will form a basin for the surface and other water, and provide a home for wild ducks.

In the woods near my home there once were two grand ponds communicating with one another, filled with fish and affording a suitable home for wild ducks. But they have been allowed to fall into ruin, the sides have given way, and what was once a small lake is now only a swamp. The great point in forming a pond is to build a barrier of stone or other durable material at the lower end. But great care must be taken that this is made quite watertight. If the work is scamped or bad material used, as soon as the water fills the pond up to the brim the weak place is discovered, and unless immediately repaired all our work is destroyed.

After we have built our wall we must puddle the bottom and the sides of new ponds. Then we must make a small outlet for the water, and here is a field for one of our most charming bits of landscape or woodland gardening. In most woods, at all events in all that have a flinty or gravelly sub-soil, there are an immense number of stones of all sizes and shapes. If we cut a new ride through the bracken and hazel and withery, we shall find generally that we cannot walk a yard without kicking against a stone, and that unless we gather these stones together and take them away the ride will never be a pleasant one. So then we collect them, and pick out all the largest, and convey them to the side of the pond. I use sometimes a donkey-cart with two animals which are so intelligent that they will follow me down steep banks that no horse would face. Then comes an opportunity for the display of taste and ingenuity on the part of him who is doing the work.

The object is to make a rock garden through which the overflow of the water may gently meander. No rules can be laid down here, but a beautiful example may be found in the Battersea Park, and when found, as Captain Cuttle used to remark, "made a note of it;" and even if the huge boulders there employed are too large for us to copy, we make a miniature rockwork on the same plan. One labouring man who has his heart in his work will, under your direction and with your assistance, do most of the work. When this work is done to our satisfaction we have only the pleasant occupation remaining of planting aquatics and bog plants, and Nature will herself provide you with a large number free of cost. When this is done the water will, instead of being a nuisance, be a great gain, an ornament the value of which we cannot overestimate. The delicate lady and the tender children need not fear to walk in the woods now lest they should take cold, for the water is racing from the rides into the pond at the

bottom, and as we stand beneath we see it quietly trickling down through the rocks, laving Ferns and kissing the Lichen as it passes, and forming a happy home for the pink-spotted trout.

But this, someone may say, will take a long time and cost a large sum of money. Well, it will, I allow, take a long time, but what of that? The winter is long; of late years it has lasted for about nine months, and the woods at least will be available for us from October till April. As to the money, where masons are employed, and that very costly and cumbersome material lime is used, the work is, as I fully allow, very costly. But there may be many readers of the Journal who have not to consider cost, though these times of reductions of rents and Irish tenants make holes in most landowners' pockets. Very much, however, can be done at a slight expense. The cost of a hundred Roses, the price of a single Orchid, will drain many lovely rides.

Each short and wintry day, except when the snow lies too heavy on the ground, will see a step made. The wind is whistling overhead—let it roar away, it hurts you not in that hollow, as you labour away making your rock garden. The air is very chill, is it? Yes, it may be, but I do not feel it; I am as warm as a toast making this little recess for a noble *Osunda regalis* I know of to grow in. And then, by no means a small consideration at a time like this, you are giving work to one at least who you know would find no employment on the farms. Work, you hear, is short, the hedges are all cut, the ditches dug, the hurdles only require one man's labour. So-and-so is out of work, the farmers have no need of him; let him come into the woods and drain me a ride. It is not hard work, and though it may be a trifle moist it is better than loafing about the lanes or spending time in the public house. And as you work on you are never alone. The very birds take an interest in your labour. Tennyson, I think, speaks of the red-breasted robin who eyes the delver's toil. How true it is. Every time the pick goes into the ground he eyes you, and if you make a good incision he gravely wags his head in approval, as if to say "Well done my friend, that was a good one; sure to be a worm for me there." I feel sure the sweet robin redbreast, if it does not sing to us, will give us a few chirps in gratitude for our labouring in providing him with a meal during such hard times as these.—WYLD SAVAGE.

PEACHES ON OPEN WALLS.

THE article of "A ROXBURGHSHIRE GARDENER" is most encouraging to all those who have neither the money nor the inclination to glaze their walls. My experience in South Wales is quite confirmatory of all he writes regarding the certainty of a crop of this unequalled fruit, and of Nectarines and Apricots too, with the aid of Archer's "frigi domo" as a protection from frost to the blossom in spring. Even in the last inclement summer we had abundant crops of Apricots, Nectarines, and Peaches of fine quality, and better than most I have tasted this year which were grown under glass. My difficulty is with green fly in the early spring, when the young wood is from 1 to 2 inches long, and when it is too cold to apply the syringe. My intention is to try "A ROXBURGHSHIRE GARDENER'S" plan of syringing after pruning with the mixture he mentions as being destructive of eggs of green fly, &c., and shall, therefore, be greatly obliged if he will state for the benefit of myself and your readers generally where "black soap" is to be procured, and whether the ordinary soft soap will do equally as well, and the quantity of either, and of flowers of sulphur to be mixed in a given measure of hot water, say a gallon.—AN AMATEUR.

SEDBURY PARK,

THE SEAT OF GILPIN BROWN, ESQ.

A VISIT in the county of Yorkshire is certain to bring pleasure to the excursionist or traveller. He will not find many places in England where the scenery is more beautiful, varied as it is by hill and vale, especially in the North Riding; and a traveller's pleasure becomes considerably enhanced when he has the fortune to visit such a fine old place as Sedbury Park, once the seat of the great L. D'Arcy. A drive of about five miles from Catterick Bridge station, which in summer is beautifully adorned with flowers, brings us to Sedbury Park, and a pleasant drive it is, for many distant objects and landmarks greet our eyes. Going in a north-west course you pass on your right the residence of Sir Henry

Burghley Lawson, charmingly sequestered amongst trees. A little further and you pass along the old highway betwixt Edinburgh and London; while on your left you see Richmond, and also get a peep at Aske Hall, the seat of Lord Zetland.

At Sedbury we were met by Mr. Jowsey, Mr. Brown's head gardener. We at once entered the gardens. The east vinery received our first inspection. It is only a small structure, 18 feet by 26, which contained Foster's Seedling, Buckland Sweetwater, and Black Hamburgh. It was planted in 1868, and has been very remunerative in its return. The next was a house devoted to later Grapes. There Gros Guillaume, grafted on Black Hamburgh, was bearing bunches of 7 and 8 lbs. weight. Foster's Seedling also had some fine bunches. The Grapes in this house were certainly creditable to Mr. Jowsey, who exhibits fruit at most of the shows in the north of England with great success.

Near the vinery is a span-roofed Peach house of moderate dimensions, which contained Grosse Mignonne and Barrington Peaches, Pine Apple and Elruge Nectarines, also two fine plants of Brown Iachia Fig, which had very heavy crops of fruit. The trees were lifted and root-pruned last year when in full leaf. If Peach or Fig trees require root-pruning it is done before the foliage falls, and by shading and judicious care they soon recover from the effects of the check. In another Peach house, span-roofed, the trees were also in excellent condition, yielding on the average about eight hundred fruit each year, the principal varieties being Royal George Peach, and Violette Hâtive and Pitmaston Orange Nectarines.

The Pine pits are three in number, fine healthy plants occupying central beds. On side stages Cucumbers and early Melons are planted out in prepared beds. From these pits useful supplies are obtained. In addition, *Euphorbia jacquiniiflora* is planted out as thick as a quickest hedge, and proves invaluable in winter. *Passiflora kermesina* was also very fine. The pits and side stages are on a level with the entrance door, which gives to the visitors an opportunity of inspecting the contents of the house with ease.

Most of the glass structures having been erected since Mr. Jowsey has taken charge, they are rather scattered, more regard being paid to utility and position than to an imposing effect. Plants are not extensively grown at Sedbury—only as many as are required for the decoration of the parterres and the house. In the greenhouse were some good specimen plants of *Lapageria rosea* on crinoline trellises sufficiently wide at the base to hide the pots. The last vinery is heated with glazed sanitary pipes, which answer their purpose and have proved very economical. This vinery is a span-roofed structure, and contained Black Hamburgh, Buckland Sweetwater, Muscat of Alexandria, Foster's Seedling, Trebbiano, and Madresfield Court, all bearing excellently. Many of the bunches were very fine, averaging from 3 to 9 and 10 lbs. each. Fungus is very prevalent in the soil, and from that cause some of the Vines suffered very much. They were lifted, fresh soil supplied, and bore as many as thirty-eight bunches to each rod the same year, which tells conclusively that the requisite judgment was used in carrying out the operation. Some of the Vines were planted in May, 1877, and made upwards of 36 feet of growth the first season. There were ninety-six joints in the growth distance, and the longest growth in one week was 21 inches.

The kitchen garden was well cropped and in good order and about two acres in extent. Plum, Pear, and Apple trees were of such varieties as Mr. Jowsey finds best adapted to the climate of the North Riding of Yorkshire. He had some fine crops of Williams' Bon Chrétien Pears, also good crops of Green Gage and Golden Drop Plums. The flower garden is near to the house, which is a fine and handsome building, and on the front of it are the arms and motto of L. D'Arcy. The park is very extensive, and presents many fine views, gently undulating and well furnished with magnificent forest trees, especially Beeches.

The pleasure we experienced in visiting this fine old place was considerably enhanced by the courtesy we received from the able gardener.—B. COWAN.

NOTES ON USEFUL FLOWERING STOVE PLANTS.

APHELANDRA ROEZLII.

THIS is a handsome plant either for the stove or for room decoration. The flowers are of very short duration in a cut state; indeed for this purpose it is of little use, as the whole

spike is never fall out at one time, and, moreover, the expanded flowers are so very easily shaken from the spikes that the least touch causes them to drop. This *Apelandra* is easily propagated either by cuttings or from seeds. The latter mode is by far the best; from seeds they grow much stronger, producing finer leaves and flower spikes. The seed is very readily produced if the plants are kept in a dry high temperature when in flower, and not allowed to become dry at the roots. Plants in flower about Christmas will under ordinary treatment ripen their seeds by May, when they should be sown in a moist heat and well shaded; indeed this is a very essential point through all their growing period, for if exposed any length of time to direct sunshine the foliage soon becomes twisted and hard, with in most cases a drooping tendency. The seeds should be sown on the surface of a propagating bed, that is if the material which covered the bed is old leaf soil or spent tan. They germinate freely without any covering, and when the plants are large enough to handle they should be pricked singly into thumb pots, using a mixture of leaf soil and silver sand, placing them on a shelf close to the glass. In three or four weeks they will require a shift into a larger size pot, say 5 inches in diameter. The soil this time must be more substantial, and consist of good fibry loam two parts, one part of sheep droppings or cow manure, and one part of crushed charcoal and a dash of sand. They should be potted very loosely, care being taken in draining the pots that a little charcoal is used with the crocks, as it tends to keep the roots healthy. If the plants when in flower are removed to a little lower temperature than that in which they have been grown their flowering season will be prolonged. I must not forget to mention that they enjoy supplies of weak liquid manure twice a week all through their growing season; it enlarges the foliage and imparts a deep silvery sheen.—H. ELLIOTT.

WORK FOR THE WEEK.

MUSHROOM HOUSE.

THE earliest Mushroom beds which have produced abundant crops will now be showing signs of exhaustion, in which case examine the materials, and if they are not too greatly decomposed the beds may be partially renewed by a good supply of water at a temperature of 100°, adding half a pint of salt to every three gallons before use. Beds in full bearing should have the surface frequently sprinkled with tepid water, taking care not to allow the bed to become too wet. Later beds just beginning to produce Mushrooms must be treated very carefully at this season of the year as regards watering. If the beds are formed of light somewhat dry materials, and where they are placed over flues or hot-water pipes, they will require water frequently and freely. Although Mushrooms are usually grown in the dark they are much more fleshy, and the flavour is enhanced by abundant light and air for an hour or two in the day. When the beds are in positions where a sufficient supply of artificial heat cannot be insured a good thick covering of dry hay will be necessary. It often happens at this season that all the available space is filled with Mushroom beds, so that it is not convenient to make up fresh beds, and yet to secure a supply in March and April it is necessary that one or more of the oldest beds be accelerated by copious waterings so as to admit of fresh beds being made. The materials should consist of fresh droppings from such horses as are fed principally upon dry food. The droppings should be kept in a perfectly dry shed, and when a sufficient quantity is collected they may be thrown into a heap to ferment; and when it is found that the heat in the centre of the heap has expelled about half its natural moisture, it should then be turned over in such manner that the outer side may receive similar treatment; when it has become half dried it may be made up into beds.

FRUIT HOUSES.

Peaches and Nectarines.—In the early forced house the flowers will have opened, and the night temperature should be 50° or 55° in mild weather, whilst in severe weather a fall of 5° through the night may be advantageously allowed, 55° by day by artificial means, advancing to 65° with sun heat. Increase the ventilation freely above 55°, but not so as to lower the temperature. Whilst the trees are in bloom syringing them must be discontinued, but the paths and borders may be damped in the morning and afternoon of bright days. Avoid a close moist atmosphere, and keep the ventilators open slightly at the upper part of the house. In the warmest and driest time in the day artificial impregnation should be resorted to in order to disperse the pollen, either by shaking the trees if on a trellis, or by a camel-hair brush or feather gently distributing the pollen on the stigma. See that the roots outside are well protected with litter or dry fern fronds. In the house intended to afford ripe fruit at the close of May or early June, and which has been closed as advised, employ fire heat only to raise the temperature to 50° in the day and to 40° to 45° at

night. The house and trees should be syringed in the morning and afternoon of bright days, and when the buds begin to swell advance the temperature 5°, ventilating freely whenever external conditions are favourable. All the trees in the late succession houses will now require pruning and dressing, and the house must be thoroughly cleaned, the trees being secured to the trellis, ventilating freely when the air is mild, keeping as cool as possible. If the borders require renewing with fresh loam it may now be done, though it is preferably performed before the fall of the foliage. Remove the old soil from between the larger roots, being careful not to injure the fibres, and cover them to the depth of 4 to 6 inches with the top spit of turfy soil, and if of a calcareous description all the better, treading or ramming it firmly. If necessary give a supply of water, as dryness at the roots even when the trees are at rest will cause the buds to drop.

Cherry House.—The house having been closed as advised about the middle of last month, fire heat may be applied to secure a night temperature of 40°, and 45° by artificial means in the day, allowing it to rise 5° to 10°, admitting air abundantly in mild sunny weather. Attend with regularity to the watering of trees in pots, not allowing the borders to lack moisture, and syringe the trees and house occasionally. If any of the trees are found unsuitable this is a good time to change them. Trees which have been trained on a wall for three or four years are desirable, planting them in fresh loam. Black Tartarian, Early Jaboulay, Governor Wood, May Duke, and Elton are suitable varieties.

Pines.—Fruiting plants and starters should now have a mean temperature of about 70°, varying it 5° according to external aspects; admitting air at 80° with sunshine, but not lowering the temperature, allowing the temperature to rise to 85°, closing the house at 80°. Syringe all available surfaces twice every day, but do not syringe the surface of the bed between the plants. Avoid producing dense steam by syringing highly heated hot-water pipes. The plants also should be syringed overhead occasionally early in the afternoon when the axils of the leaves become dry. About the commencement of next month another batch of Queens should be started to supplement the supply of fruit from those plants which are already introduced for that purpose. Beds having hot-water pipes beneath them can soon be prepared for the reception of the plants, but it is not the case where fermenting materials alone are employed, hence the subject is mentioned now so that the matter may be seen to at once, and 85° to 90° of bottom heat secured by the time required. When plants which have been kept somewhat drier are to be started see that the balls of the plants are made thoroughly moistened, so that with the extra warmth root-action may commence at once. A night temperature of 60° to 65°, and 5° less in severe weather, will be suitable for successional stock, and 5° to 10° more in the daytime according to external conditions.

Figs.—To obtain ripe Figs from the middle to the end of May from trees planted out the forcing should be commenced at once, the border having been thoroughly watered, after which the surface may be mulched with short manure about 2 inches thick, placing it rather thicker near the stem so as to encourage the roots to extend. The surfaces of the house and trees will require an occasional syringing, the night temperature being 50°, and 55° from fire heat by day, and from 60° to 65° with sun heat, ventilating freely at that temperature. When the early trees in pots have started into growth the temperature should be gradually advanced to 60° at night, and 65° by day by artificial means, and 70° to 75° with sun heat, commencing to ventilate at 70°, closing at 75°; but avoid a high temperature by artificial means, as the sturdier and shorter-jointed the young shoots can be kept the greater will be the chances of a satisfactory early crop. The trees and house will need to be syringed twice a day—in the morning and again at closing, but avoid a confined saturated atmosphere in dull weather. As the fermenting materials settle firmly about the pots add more fresh leaves, bringing them nearer to the rims of the pots, taking care that the heat about them does not exceed 70° to 75°. Water the trees as required with weak liquid manure, and place some turves about 2 inches thick, grass side down, on the surface of the pots around the rims, extending over the sides towards the fermenting material, with a view to encourage the surface roots. These should be watered with weak liquid manure, so as to keep them moist, filling the space between the turves and stems of the trees with well-decayed manure.

PLANT HOUSES.

Bedding Plants.—Seeds of subtropical plants, such as *Cannas*, *Ferdinandia eminens*, *Acacia lophantha*, *Eucalyptus globulus*, *Melanthus major*, *Ricinas*, *Wigandia*, *Udnea*, *Solanums*, &c., should be sown in a brisk moist heat as soon as possible, so that there is sufficient time for them to become large plants and admit of their being well hardened off before planting out. Any old plants of the above that have been retained for propagating should be pruned and plunged in bottom heat to induce the production of side shoots for cuttings. *Aralia papyrifera* is best propagated by large fleshy portions of the roots cut into lengths of about 2 inches, placed in pans in sandy loam and plunged in bottom heat. *Aralia Sieboldi* should be obtained from seed, as it is slow in yielding cuttings. Where the stock of succulents is likely to be short

the fleshy leaves of *Echeveria metallica*, *Pachyphyton bracteosum*, *Kleinia repens*, *Cotyledon Umbilicus*, &c., should be put in at once in dry heat, where they will soon produce roots. If sufficient leaves cannot be procured for this purpose seeds may be sown, and good plants will be obtained by bedding time if they are grown in gentle heat. *Alternantheras*, *Coleuses*, and *Iresines* must have a mean temperature of 65°, and they will then produce plenty of cuttings. Store plants of *Lobelias*, *Ageratums*, *Verbenas*, &c., may now be placed in gentle heat, and they will soon afford a supply of cuttings.

Greenhouse.—Hardwooded plants suffer more from the effects of fire heat consequent on sharp firing in severe weather than many other plants, therefore no more fire heat should be employed than is necessary to ensure their safety. Such plants as flower before commencing their growth it is undesirable to hasten before their proper season, therefore employ no more fire heat than is needed to maintain a temperature during the night of 40°. Any plants very near the glass will be better lowered a little during severe weather, and see that plants on lattice stages in close proximity to the hot-water pipes are not affected thereby, as in healthy plants quantities of the best roots will be at the bottom of the pots; any danger of this may be obviated by placing boards beneath the pots. Keep the atmosphere as dry as possible, and whatever watering is necessary should be completed early in the day, after which open the roof lights a little or according to the state of the weather outside. *Azaleas* will endure a temperature as low as freezing point or even a few degrees lower without injury, but nothing is gained by such treatment; they should nevertheless be kept cool, and not allowed to become so dry at the roots as New Holland plants. Heaths like a low temperature, and with a dry atmosphere they succeed admirably, frost only being excluded. Admit air freely to these plants when the weather is favourable, but in frosty weather do not open the side lights. Look over all the stock every other day to ascertain what water is required, for although their requirements are at the lowest, still the roots are more or less active and must have water as needed.

Stoves.—Start a few plants of *Allamandas* for early flowering. If the plants are of full size cut them back to the old wood. *A. Cheloni* and *A. Hendersoni* are the best to commence with. Turn the plants out of the pots, with a pointed stick reduce the balls to half, and then soak the ball in tepid water to thoroughly moisten it. Turfy loam with a sixth of decayed manure and sand sufficient to keep the soil porous is the best material for potting. Ram the soil hard, draining efficiently, placing the plants near the glass and syringing overhead daily. *Bougainvillea glabra* should be started, the branches being cut back into ripe wood, and when the young shoots are an inch long remove about a third of the old soil and re-pot the plants, employing loam with a fourth of manure. *Clorodendron Balfourianum* may also be started, giving instead a top-dressing of rich soil after removing the loose surface soil. The temperature should not be increased until the days are longer, 60° to 65° at night and 70° to 75° by day is ample. Plants coming into flower should be kept as near the glass as possible. If a few *Achimenes* and *Gloxinias* are now started they will prove useful for decoration or affording cut flowers, and similar remarks apply to *Begonias*, all of which should be grown on shelves near to the glass. *Gardenias citriodora* and *intermedia* coming into flower should not have water overhead, and not have too much water at the roots. *Imantophyllum minimum* should also be kept dry when expanding the flowers, the same with *Eucharises*, which will prolong the flowering period. *Isorais* and *Dipladenias* must have the warmest end of the house. A few *Amaryllides* may be placed in heat, and though bottom heat will cause them to throw the scapes more quickly they must be brought into flower in plenty of light. *Aphelandras cristata*, *nifens*, *aurantiaca*, and *Roezli* should have a good light situation; light considerably intensifies the colour of the flowers. *Anthurium Scherzerianum*, though it will continue growing and flowering continuously, is benefited by rest. Plants that have completed the growth may be placed in a house with a minimum of 50° for a couple of months to the benefit of the subsequent flowering and growth.

Forcing House.—If the earliest batch of pot *Roses* be now placed in a little moist heat they will shortly afford a quantity of useful flowers, indeed we have now *Niphetos* and others in bloom in a temperature of 50°. The following are good varieties:—*Niphetos*, *Souvenir d'Elise*, *Marie Sisley*, *Madame Willermoz*, *Julie Mansais*, and *Devoniensis*, all white though variously tinted; *Duchess of Edinburgh*, *Madame Chavert*, *Madame Lambard*, *Madame Falcot*, *Monsieur Furtado*, and *Letty Coles*, all Teas; to which may be added a few *Perpetuals*, as *Boule de Neige*, *Alfred Colomb*, *Baronne de Rothschild*, *Charles Lefebvre*, *François Courtin*, *Marquise de Castellane*, *Miss Hassard*, *La France*, *Madame Lacharme*, *Sir Garnet Wolseley*, *Senateur Vaisse*, and *Miss Poole*. Regularly introduce to this structure more *Hyacinths*, *Narcissuses*, *Tulips*, &c.; also *Rhododendrons*, *Azaleas*, *Kalmias*, *Deutzias*, *Spiraeas*, *Dielytras*, *Prunuses*, *Hawthorns*, *Sweet Briars*, *Lilacs*, *Clematisses*, *Lilies of the Valley*, &c. Bulbs of all kinds grown in pots must be allowed to remain in the bed of ashes or other material until they are growing; but when the pots are filled with roots and the

tops have pushed an inch or so they should be removed to a cool house where frost is excluded.

FLOWER GARDEN.

The greatest charm of a garden in winter is its well-kept lawns and walks, which should be swept and rolled frequently to keep them in good order. Herbaceous borders should have a top-dressing annually, partially decayed leaf soil being well suited for the purpose, and when still more decayed leaf soil is an admirable surface dressing for beds of *Rhododendrons* and *Azaleas*. Charred refuse also is an excellent dressing for flower beds and borders. Clippings of hedges, prunings of trees and shrubs, accumulate in considerable quantities in the course of a year, and may be utilised annually. A good fire will require to be started with dry wood, and a good body of fire being obtained the accumulated rubbish should be thrown on gradually, taking care to keep the fire gently smouldering, so as to convert the materials into charcoal without fully consuming them.

TRADE CATALOGUES RECEIVED.

Ireland & Thomson, 20, Waterloo Place, Edinburgh.—*Catalogue of Vegetable and Flower Seeds*.

Osborn & Sons, Fulham, London.—*Catalogue of Vegetable and Flower Seeds*.

James Dickson & Sons, 108, Eastgate Street, Chester.—*Catalogue of Vegetable and Flower Seeds for 1890, and List of Fruit Trees*.

Daniels, Brothers, Norwich.—*Illustrated Guide for Amateurs*.

TO CORRESPONDENTS.

* * All correspondence should be directed either to "The Editors" or to "The Publisher." Letters addressed to Mr. Johnson or Dr. Hogg often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Correspondents should not mix up on the same sheet questions relating to Gardening and those on Poultry and Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

BOOKS (C. W.).—One of the most comprehensive works on practical gardening is McIntosh's "Book of the Garden," in two vols., price £3 17s. 6d., and of the farm, Stephen's "Book of the Farm," in two vols., price £3. These works are published by W. Blackwood & Sons, Edinburgh and London. The other subject does not come within our province.

BOWING ROSE SEEDS (*Devonshire*).—You cannot do better than adopt the practice of the late Mr. Rivers, as detailed in his "Rose Amateur's Guide," as follows:—The hips of all the varieties of Roses will in general be fully ripe by the beginning of November; they should then be gathered and kept entire, in a flower pot filled with dry sand, carefully guarded from mice. In February, or by the first week in March, they must be broken to pieces with the fingers, and sown in flower-pots, such as are generally used for sowing seeds in, called "seed-pans," but for Rose seeds they should not be too shallow, 9 inches in depth will be enough. These should be nearly but not quite filled with a rich compost of decayed manure and sandy loam or peat. The seeds may be covered to the depth of about half an inch with the same compost; a piece of kiln wire must then be placed over the pot, fitting closely at the rim so as to prevent the ingress of mice, which are passionately fond of Rose seeds; there must be space enough between the wire and the mould for the young plants to come up, half an inch will probably be found enough. The pots of seed must never be placed under glass, but kept constantly in the open air, in a full sunny exposure, as the wire will shade the mould and prevent its drying. Water should be given as needed in dry weather. The young plants will perhaps make their appearance in April or May, but very often the seed does not vegetate till the second spring. When they have made their "rough leaves," that is, when they have three or four leaves exclusive of their seed leaves, they must be carefully raised with the point of a narrow pruning knife, potted into small pots, and placed in the shade: if the weather be very hot and dry they may be covered with a hand-glass for a few days. They may remain in those pots a month, and then be planted out into a rich border. By the end of August those that are robust growers will have made shoots long enough to take buds from. Those that have done so may be cut down, and one or two strong stocks budded with each. These will the following summer make vigorous shoots, and the summer following, if left unpruned, to a certainty they will produce flowers. This is the only method to ensure seedling Roses flowering the third year; many will do so that are not budded, but very often the superior varieties are shy bloomers on their own roots till age and careful culture give them strength.

ERECTING GREENHOUSE (*J. Sharp*).—The back wall will not be too high, neither would it be were it 6 inches higher; the heights of the two walls will, however, answer very well. A flow and return of 8-inch pipes will afford you ample heat. We never recommend boilers, but if you consult our advertising columns for the past two months you can select an apparatus that will answer your purpose.

TRELLIS FOR CLIMBERS (*K. T.*).—A wire would be preferable to a wood trellis as being both lighter in appearance and more durable. When wood trellises commence decaying they are a source of great annoyance, as they are most difficult to repair.

VALLOTAS AND EUCHARIS UNHEALTHY (*S.P.*).—The bulbs sent have not been injured by a spider, indeed the Vallota bulb has not been injured at all; whether the leaves have been injured or not we have no means of knowing, but the bulb is certainly quite sound. The Eucharis bulb has been injured, but not by a spider; it may have been eaten by a snail and canker and decay have ensued, accelerated probably by over-watering. Yet the

bulbs are not healthy, and root-action appears to have been defective. This may have arisen from unsuitable soil or excessive watering. Repot the plants, removing most of the old soil, and employ a compost of turfy loam with a very liberal addition of broken charcoal, adding sharp sand if the loam is heavy. In potting employ smaller, thoroughly well-drained and clean pots, and surround the bulbs with a little crushed charcoal, which will prevent further decay and promote the emission of roots. Water carefully until fresh roots are formed, then more copiously. Place the Eucharis in a warm stove, and the Vallotas in an intermediate house—*i.e.*, a minimum temperature of 65° for the former and of 60° for the latter, and with good attention the plants will regain their lost vigour. You cannot use too much charcoal in the soil, but at present manure would be injurious rather than beneficial.

CHRYSANTHUMS GOING BLIND (*E. Wilson*).—Your plants have doubtless suffered in common with those of many other growers this season from the wood being insufficiently ripened before housing the plants. Commence propagating for next autumn's display at once, following the practice recommended on page 477, December 18th, 1879, and do not stop your plants after the end of April if large flowers are required. Chrysanthemums for yielding cut blooms large enough for exhibition are not generally stopped at all, but are left to grow with one long straight stem. Place them in the most open and warmest situation during the summer months; alongside of a gravel path answers well. Do everything you can to mature the wood, and make the buds large and plump before housing the plants. Your time for taking them into the greenhouse is quite right; always house them on the approach of frost, but carefully remove all second growth afterwards. If your greenhouse is small and will not allow of the plants being staged to grow naturally, you may remove the support and attach the growth to the rafters similarly to Vines. Flowers allowed to expand in this way generally fill up well in the centre, especially the varieties with long florets.

GRAPE SUPPLY (*F. G.*).—Had you stated the size of the houses, or better still the number of Vines of each variety, with about the length of their rods, we should have been better able to have answered your question. With a sufficient number of healthy Vines in bearing condition, and good and well heated houses, Grapes may be had from the varieties you name nearly or quite all the year round. During some seasons the bunches of Lady Downe's may not keep until the Black Hamburgs in pots ripen their fruit. Last spring, for instance, in consequence of the prolonged cold weather and the remarkable absence of sun, the earliest pot Vines in charge of the most competent cultivators were a comparative failure, the crops being both scanty and later than usual, and in many places the supply could not be maintained during the months of April and May.

PROPAGATING AND CULTURE OF CYTISUS (*Constant Reader*).—Cuttings of *Cytisus racemosus*, which is the name of the yellow flower you have sent, should be inserted about the last week in August. Choose stubby side shoots about 3 inches long which are moderately firm. They will strike just as well without a heel as with, but it would be safer for beginners to take them off with a heel. They should be put in well-drained pots in a mixture of loam, peat, and sand, with about half an inch of sand on the surface, and have a gentle watering, and then be placed in a close cold frame. By keeping them carefully watered they will shortly callus, and then if the pots can be placed in gentle bottom heat the cuttings will be well rooted in a month. At this stage they should have their points taken out, and when they have broken pot them off into 2-inch pots in two parts turfy loam and one of peat. Keep them rather close till they begin to grow, when they should have plenty of air and light. They may be plunged in ashes in a protected frame till the latter end of March, when they should be repotted into 5-inch pots in two parts turfy loam, one of peat, and one of cow dung well rotted. Keep them in the cold frame till the middle of May, when they should be plunged in ashes in the open air in an exposed situation where they can receive abundance of sun. Being grown in such small pots it is important that the plunging, also regular watering, be attended to. Keep the shoots closely stopped till the beginning of August, when the pinching should be discontinued. Let the plants remain in the open air till there is danger of frost. When the pots are filled with roots the plants will be greatly benefited by some weak liquid manure twice a week till they are placed in their winter quarters, which should be in cold frames or a greenhouse, where they will soon set their flower buds; and by placing a few of the forwardest in an intermediate temperature a succession of bloom can be provided from the beginning of March till the latter end of May. Few plants in the spring months are so bright and effective as these; they are dense masses of gold when grown as above described. Generally they are seen of loose straggling habit, caused by too tender nursing and insufficient stopping of the shoots in summer.

PROPAGATING LIBONIA FLORIBUNDA (*Idem*).—Cuttings of the young wood of *Libonia floribunda*, the name of the other plant sent, strike readily in the spring. Insert them the same as the *Cytisus* cuttings, but place the pot in a heated frame or propagating house. When rooted remove them to a cooler and lighter house for a few days, then pot them off in sandy loam and peat; keep them close for a week, then place them on a light shelf, and as the weather becomes warm in a cool frame. Repot them as required, water carefully, and let them have plenty of sun and air during the summer, placing them in the greenhouse on the approach of cold weather in the autumn.

SHRUBBY CALCEOLARIAS (*Idem*).—Had you followed the instructions given in *Work for the Week* and in the *Villa Garden Notes* you would have inserted the Calceolaria cuttings in a cold frame in October and allowed them to remain there until March; you would then have had healthy plants instead of the poor weaklings you have recently potted and placed in a warm greenhouse. Remove them to a frame and protect them from frost, and by watering them carefully you may succeed in saving a portion of the plants. If you continue them in heat they will all be ruined.

LIMITING VINE BORDERS (*J. G.*).—The record of Mr. Speed's practice of dressing the Vine borders at Chatsworth, written by Mr. Pettigrew, will be found on page 373 of vol. xxxiv. (the issue of May 16th, 1868). Reference is there made to various manures employed by Mr. Speed, who is a very successful cultivator of Grapes. If you do not possess the number referred to you can obtain it by sending 5s. in stamps to the publisher, requesting him to send you No. 894 of the *Journal of Horticulture*.

TEMPERATURES (*Under Gardener*).—If we understand your letter rightly you appear to require an atlas of physical geography in which there are maps devoted to the illustration of the temperatures in all parts of the world. All places with equal summer, winter, or mean temperatures are connected by imaginary lines termed isothermal lines, and thus the temperature of the

globe is apparent at a glance. Many cheap atlases and elementary works on physical geography are published. Write to Messrs G. Phillips & Son, Fleet Street, or W. Collins, Sons, & Co., Brixwell Place, Blackfriars, for a catalogue of their works, and make your own selection. Your desire for self-improvement is very commendable, and you might with great advantage devote a portion of your evening hours towards attaining to greater proficiency in writing, spelling, and grammar.

MEALY BUG ON VINES (*Amateur Grape-Grower*).—Your Vines are severely attacked with what is perhaps the worst pest that is permitted to become established in a vineyard. You will find great difficulty in eradicating it, and the work of cleansing the Vines and house must be thorough. Prune the Vines at once, and burn every portion of the removed laterals. Then wash the rods with a strong solution of soft soap—3 or 4 ozs. of soap being dissolved in a gallon of water—applying it at a temperature of 140° with an old spoke brush, every portion of the rods and spurs being vigorously scrubbed. Wash every portion of the woodwork of the house, sashbars, doors, and stages with the same solution, and then syringe the glass with clean hot water, also the walls, these to be afterwards dressed with hot lime-wash. If the Vine roots are inside remove 3 or 4 inches from the surface of the border and replace with fresh compost. It would be well if the woodwork could be painted, first giving it a coat of pure paraffin, but no plants must be allowed in the house for a few weeks afterwards. Even after all this care in cleansing the Vines and house insects may appear in the spring; these must be watched for sedulously and destroyed promptly. For keeping mealy bug in check during the summer we know of no plan more easily adopted and effectual than frequent and copious syringings with pure water.

TYSON PEAR (E. B.).—This Pear is described as follows in Dr. Hogg's last edition of the "Fruit Manual":—"Fruit below medium size, obovate, even in its outline. Skin yellowish green, covered with brown russet on the shaded side, and with a dull brownish red cheek, covered with large russet dots on the side next the sun. Eye open. Stalk an inch long, woody, inserted without depression. Flesh yellowish white, coarse-grained, half-battery, juicy, and sweet. An indifferent American Pear; ripe early in September.

DIFFICULTY OF OBTAINING PEARS (*Idem*).—Pears are occasionally mentioned in this Journal by Fellows of the Royal Horticultural Society who have obtained grafts from the Society's gardens of varieties that are not in commerce; but the two Pears you name are in commerce, for we observe that Belle Jule is included in the lists of Messrs. William Paul & Son, Waltham Cross, and Charles Lee & Son, Hammersmith, while Nouvelle Fulvie is in Mr. W. Paul's list; also in those of Messrs. Veitch, Chelsea; Bunyard, Maidstone; Lane & Son, Great Berkhampstead; Rivers, Sawbridgeworth; and probably in some others to which we have not referred.

COLONIAL GARDENING (W. E. B.).—We do not think there is any great demand for gentlemen's gardeners in the colonies you name. Most of the appointments to the coffee plantations in India are made from the Royal Gardens, Kew; and candidages, we believe, have to pass examinations in writing, spelling, arithmetic, grammar, &c., besides affording proof of competency as practical cultivators. The latter qualification you may probably possess, but without further study and preparation you would fail to pass the requisite educational standard.

CULTURE OF ECHMEAS (S. Bluff).—These plants, in common with all Bromeliaceous plants or allies of the Pine Apple, require during their season of growth a high and moist temperature, which should range between 68° and 78° Fahr. The compost employed should consist of good loam with a small proportion of leaf soil and plenty of sand, the pots being well drained. The water which from syringing or condensation accumulates in the axils of the leaves and centre of the plants should not be allowed to become stagnant, but occasionally invert the plants for a few moments. A moderately sunny position is beneficial to their requirements. When the plants have ceased growing the supply of water may be diminished, and even if the soil becomes dry they will receive no injury at that period.

THE HYBRIDIZATION OF FERNS (Antrim).—We are unacquainted with the "mode by which any particular character in the parent Fern may be transmitted to the seedlings." The fertilization and reproduction of Ferns are extremely intricate, and it is only with in the last twenty years that botanists have arrived at any definite or satisfactory knowledge of the phenomena. When spores are placed in suitable conditions as to moisture and temperature they increase in size, and ultimately form a green cellular expansion on the surface of the soil. On the under surface of this prothallium are produced two distinct cellular bodies termed archegonia and antheridia, the former being considered as representing the pistil of flowering plants and the latter the stamens. Within the antheridium are formed numerous minute spirally-twisted filaments termed antherozoids, which at a certain period escape, and by floating about in the moisture of the soil reach and fecundate the archegonia, from which arises the young plant. Cross-fertilization may possibly be effected by sowing spores of different species in the same pan, when the antherozoids of one species may be carried to the archegonia of the other species, thus producing what would appear to be analogous to a hybrid; but although this is probable, we do not know of a well-certified instance of such a result. The created varieties of Ferns if they produce spores may be increased in the same manner as other Ferns, but when they are barren division of the plants is the only course to pursue.

EXTENT OF NURSERY GROUND IN GREAT BRITAIN (Inquirer).—According to the recent agricultural returns compiled by Mr. R. Giffen, of the statistical department of the Board of Trade, we find under the heading "Nursery Grounds," or land used by nurserymen for growing trees, shrubs, &c., that England possesses 10,029 acres; Surrey, 1841 acres; Yorkshire, 925 acres; Kent, 646 acres; Cheshire, 525 acres; Derbyshire, 468 acres; Hertfordshire, Middlesex, and Essex, each between 400 and 500 acres; Devon, Lancashire, and Worcestershire, each between 300 and 400 acres; Cumberland, Gloucestershire, Somerset, and Staffordshire, each between 200 and 300 acres; and the rest of the English counties less than 200 acres each. Scotland contains 1740 acres of nursery lands; Edinburgh having 526 acres; Aberdeenshire, 182 acres; Dumfriesshire, 135 acres; Forfarshire, 107 acres; Perthshire, 100 acres; and other counties less than 100 acres each. Wales contains a total of 325 acres. The total nursery grounds in Great Britain amount to 12,094 acres.

NAMES OF FRUITS (J. Ham).—We are sorry to say we cannot identify any of the specimens you sent. We suspect they are local varieties. Thanks for your letter.

NAMES OF PLANTS (Subscriber).—1 is *Eranthemum ambiguum*. The other specimens we cannot name without flowers. (A. H. S.).—A pretty variety of *Leila autumnalis*.

The Home Farm: POULTRY, PIGEON, AND BEE CHRONICLE.

PARING AND BURNING LAND.

THIS method of cleaning land is of ancient date, and taking into consideration the difficulties connected with agricultural pursuits it is thought by some farmers that we shall have to resort to this as well as other primitive practices in order to meet the competition of foreign countries. We enter upon this subject, as we believe, at a fitting time, seeing that a succession of adverse seasons for four or five years have culminated in one quite exceptional; for although in some previous seasons it had been quite impossible to clear the land of grass, weeds, &c., yet 1879 has doubled all the difficulties. In various districts where strong land prevails the fields under fallow, after having been tilled at enormous cost both by steam power and otherwise, are now mere barren wastes, and could not be seeded for roots in summer nor sown with wheat in the autumn. As this is the case no ordinary time and power can enable us to meet the next harvest with anything like good crops raised from well-prepared land, unless we resort to those systems of culture which, whether old or new, can alone overcome the difficulties which are existing upon the home farm.

We shall on a future occasion refer to others, but at present we shall confine ourselves to the subject of "paring and burning," believing that it will prove, if properly carried out and with a season at all favourable, one of the best economies and supplements which can be added to the ordinary course of management upon the home farm, even including the use of steam power. One of the principal advantages of paring and burning is that in one operation it not only cleans the land but also manures it, and these being the two leading points in successful farming we may well revert to the practice. Now, although this system has been peculiar to Gloucestershire and others of the western and midland counties for a long period, there is no reason at all why it should not be resorted to in other districts of heavy land, especially as the eastern and southern counties possess a drier climate, which will certainly favour the practice of paring and burning. We have also strong reasons for believing that we have implements adapted for paring which are more useful and economical for the work than formerly existed. We well remember the time when we had this work done principally by manual labour, and very severe labour it was; none but the strongest and trained men were capable of propelling the breast plough entirely by the force and weight of the body. These ploughs are composed of a forked shaft about 6 feet long, which at the end is attached to a propelling bar with handles at each end, and is driven forward from the breast or thighs. The share or turf knife attached is of steel, about 9 inches in width, with a cutting edge turned up on one side, and thus the land is pared and the turf turned over by the combined action of the propeller and the use of the handles after being cut of the required depth and length. This plan answers very well upon meadow land and strong arable land without stones in it, but upon soils containing stones or flints a paring plough drawn by horse power is necessary. A scarifier also, like Bental's, is sometimes used, with steel shares with a finger on the blade to lift the turf; but generally it is better not to use an implement too wide, as it does not fit the inequalities of the surface like a single share; we therefore have commonly used a broad share attached to the ordinary light plough, which answers the purpose well. At the Kilburn meeting of the Royal Agricultural Society this year, however, we saw for the purpose of paring an implement much like an ordinary horse hoe, only much stronger, with two steel cutting knives, made by Barrett, Exall, & Co. of Reading, and called a "paring plough," and it certainly seems likely to answer where the land is level, and without any impediment by stones, &c.

With one or other of these implements we ought to be well

equipped upon almost any soil under any circumstances. We have, however, another matter to consider, for where the white-rooted couch exists it usually dives a considerable depth into the soil, and in such cases it is often required to be steam-cultivated instead of being pared. The steam cultivator lifts the soil and draws out the white roots of the couch instead of cutting them off, so that when the lifting drag follows the cultivator it leaves the turf in broken clods, in which state it is, if tolerably dry, in a fit state to burn. Upon strong clay and tenacious soils the white-rooted grass does not often prevail, except through long bad management and neglect; we have therefore in that case only to deal with those grasses which flourish chiefly on the surface, such as what we term the twitch or running grass, black bents, &c., and these are of course dealt with best by the paring plough, and cut almost as easily as a meadow turf.

In carrying out the system of paring and burning we must consider what soils are suitable for the work, and our experience teaches us that those light soils called sandy and gravelly are not adapted for it; nor is it so much required for cleaning this kind of land, because these soils work freely, and therefore the couch grass and weeds are easily separated from the earth. It is also difficult in practice to burn these soils, because when turves or bunches of grass grown upon these soils are cast on the fires they settle down so closely that the air is impeded in its circulation in the heap, and consequently the fire burns slowly or goes out entirely. The soils best adapted for paring and burning, in order to obtain the full advantage of the process, are those of a strong calcareous nature and most other clays, the object being to obtain manure as well as the destruction of weeds. We obtain important results by the residue or ashes of the stronger soils of any description, and especially those yielding a large amount of potash and carbonate of lime, each in varying proportions, according to the composition of the soil before burning. In the process of burning valuable ashes are obtained from old clover and saintfoin leas, as well as from the coarse or couch grasses and other weeds which the land may contain. The ashes and their constituents as exhibited by analysis we shall have to show further on; also we shall show the advantage of burning land and its contents, including noxious weeds of every kind, and also the roots of former crops found in the soil. These weeds and grass when left in undisturbed possession of the soil are the resort of various sorts of insects inimical to almost every kind of agricultural produce; and although these insects may be greatly disturbed in their habits by the ordinary process of agriculture, yet their entire destruction is only obtained by the action of smoke and fire in the case of paring and burning.

The enemies to agricultural crops are really so numerous that we cannot hope to enumerate them all at present, but the chief of them consist of wireworms, grubs, slugs, and snails. All these will be destroyed entirely by paring and burning the land, especially if it is done by turfing and burning with as little disturbance as possible of the turves after being cut. We strongly advise the plan of paring as compared with cultivating before burning, because the latter plan during tillage would so disturb the insects in their haunts and holes that many would escape and again hide themselves in the loose earth before the clods could be placed on the fires; but it is otherwise when the surface is cut over by the paring or breast ploughs, because in that case they would be but little disturbed in their hiding places before the turf would be placed upon the fires. This is one of the strongest reasons why the old style of paring and burning is still most advisable.

We have still various matters in connection with this most important subject to bring before the home farmer; for instance, we have to show what manure and its value is derived from the destruction of weeds and other vegetable remains which may be found in the soil. For this and other objects we propose in continuing the subject to illustrate them by the experiments of the most intelligent men who have studied the subjects.

(To be continued.)

WORK ON THE HOME FARM.

Horse Labour.—This will be urgently required as soon as the frost is well out of the ground in ploughing and sowing wheat, which has been so seriously delayed in many districts; and it should now be pushed forward, for every day is of consequence when once we have entered the new year, and the only fear is that the land will be too light after such a long frost; therefore, if the work can be finished off in a decent condition the closer and heavier the land comes up on ploughing the better, because after a frost like that which has prevailed it is sure to be very light when it becomes dry. Upon all dry soils it is worth consideration whether, the land intended for wheat having so long remained unsown, it may not now answer better if sown with barley, seeing that the land can never be too light and fine for that crop. It is very desirable that the first and earliest seedtime should be taken, as it usually gives a crop of the most value for malting purposes; and in many cases weeds are very abundant, and in this case the barley may be sown in drills 9 inches apart in order that the horse

hoe may be worked freely, which will not only destroy the weeds, but at the same time the clover and grass seeds may be sown immediately after or just before the hoeing is done. We do not, however, recommend the sowing of barley with clover and grass seeds, because we believe that it not only renders the harvesting of the crop difficult but during the period of growth it competes strongly with the barley, and often prevents the grain from becoming sufficiently stout and plump for malting purposes. This brings us to mind another idea as to whether we should not change our clover seeds, for although it is a common plan of sowing Broad clover one course and Dutch with alsike the next, yet we think a further change would be desirable—that is, to sow Giant saintfoin seed of foreign growth with some Timothy and Facey's Perennial grass. This will be not only a great change for the land, but it will hold on well for two or three years if required. This plan will be adopted now more than it has been, because of the low price of cereal produce and the advantage it gives for feeding as old ley by cattle or sheep. The work of the farm, such as drawing dung on to the clover leys and laying of chalk on the stubbles and compost on the grass and park lands, will have been got well forward on the break-up of the frost; more time and less hindrance will thus be in favour of fallow-ploughing, raftering, &c. We, however, like the plan of back-stetching, or double raftering, in those cases where the land is very foul with couch grass, as it keeps the couch near the surface and the land open and hollow, so that it may be dragged and harrowed on to the surface as soon as the weather proves sufficiently dry. The trifolium and winter vetches have proved a very bad plant in many instances; on some fields they have been entirely destroyed by the slugs before the frost set in. These crops are really so important and valuable for summer foddering of horses, cattle, sheep, &c., that this matter should have the immediate attention of the home farmer, because as soon as the land will work dry and freely both winter and summer vetches may be sown for a succession. Trifolium, too, may now be sown for an early cutting, but the land should be clean and with a fallow surface and made very fine, and the seed sown after the ring roller, in which case the seed falls into the grooves made by the rings of the roller and becomes well buried by one or two turns of the chain harrow.

Hand Labour.—The employment for men will now be hedging, ditching, trenching in the meadows, and attending to the flooding of the water meadows, banking, filling, and spreading of manure upon the clovers and pastures, &c., also forking out couch grass upon the clovers and upon any of the land lying fallow-ploughed for mangolds and potatoes. In both these cases it has been our practice for many years as soon as any small tufts or bunches of couch appear to fork them out, because in case they are left in clovers they are sure to spread as the season advances, and the work, which is now only hand labour, would eventually become a serious cost in horse labour. In the same way we have always found it answer a good purpose to fork out the bunches of couch or onion grass as soon as it makes the first shoot upon land intended for potatoes and mangolds, because the once ploughing and planting will be sufficient for both these crops. The advantage of this is that the work can be finished early, so that whether the season afterwards should be either too wet or too dry the work will be completed in good time. The same plan of forking grass applies at all times of the year, for by that means a few shillings expended per acre in manual labour saves many pounds in horse labour, and also saves the season and gives the best seed time in many instances. The forward lambs from the horned ewes will now be nearly fit for market. We have, in fact, seen some sold, and found them extremely fat, for the absence of rain since Michaelmas has been favourable for them. The Dorset down ewes are now lambing fast, and will require great care and attention. As soon as the lambs are strong enough to go to the field with the ewes, their first root food should be carrots cut into dice-like pieces by passing them twice through Gardner's cutter, and mixed with bean meal and oilcake in meal with the best Dutch clover hay in the racks. The Hampshire down ewes are just now due to lamb in a few days, and when the lambs are a cross with any long-wooled or Oxford breed they will not only come quicker to market than pure Downs but bring many more doubles, which when they fall require more attention than single lambs.

MATING POULTRY FOR BREEDING.

We hope that our preliminary observations on strains will enable us to make some of our promised hints on the mating of poultry more intelligible than they would otherwise be. To begin with, there is an important fact to be remembered—viz., that as a rule the male bird chiefly affects the external appearance of the produce, the hen the internal qualities. We do not for a moment relate this as a new discovery. It was long ago pointed out by some of the best authorities on such subjects. We have, however, fully verified the fact in our yards. The natural deduction, of course, from this is that if we wish to keep a breed or strain of special excellence as layers or mothers we should carefully mark the hens which lay large eggs, or many of

them, or which have proved themselves particularly assiduous mothers, and keep their eggs for hatching. We wish people would more often take the pains to do this. A good henwife should know the eggs of every hen, and if only the trouble were taken to discover the most productive really improved strains of any breed might be obtained. For points of feather, fanciers will take almost any trouble over pedigrees. Why should not some of them do the same for the perpetuation of useful qualities? On the other hand, since the cock so strongly influences the appearance of his progeny he must chiefly be looked to for particular points, as well-formed comb or crest. Again, if it is desired to obtain cross-bred birds chiefly resembling one of the parent races the cock, of course, should be chosen of that kind; when, however, it is necessary to introduce fresh blood from a different breed on different strains, and yet there is fear of some beauty being thereby diminished, let the extraneous bird be the hen. There are exceptions to most rules, and we think we know one to this. Great size may generally be traced to the mother.

The first rule generally laid down in all instructions for mating for the production of both special form and feather is that the nearest approach to perfection is to be expected from parents which have opposite exaggerations or defects rather than from birds almost faultless themselves. To make this comprehensible we will give an instance or two. Firstly as to form: a Coochin should have heavily feathered legs, yet should be free from stiff wing-like vulture hocks, which are an exaggeration of heavy leg feathering; it is then generally asserted that perfection in this respect—i.e., a mass of feathers curling closely round the hock joint—is more likely to be obtained from an outrageously vulture-hocked bird and one sparsely feathered on the legs than from two almost perfect specimens. Or again as to feather: a Light Brahma should have broadly and darkly marked neck hackles. If these stripes are absent the bird looks poor and washy; if, on the other hand, they are very heavy, in nine cases out of ten they are accompanied by spots on the back—i.e., a continuation of the dark markings, which entirely spoils the contrast between the clearly defined hackle and the pure white back. To breed this variety, then, it would follow that one of these heavily marked birds should be mated with one almost devoid of marking. This has long been looked upon as a first principle for mating by many of the initiated, but we must beg leave to dissent from it. As a matter of fact probably some very good birds may in this way be produced; but to us it appears objectionable, for in the long run it encourages diversity of types in a breed. It is probably only the few, the very few, of the produce that will be good; the many will be defective in the one direction or the other. What, too, of the next generation? It will be impossible to depend upon having birds of any particular type. Peculiarities commonly skip a generation and reappear in the next; some, then, of the offspring will in all probability take after the one grandparent, some after the other, and great diversity will ensue. This is a source of great disappointment to purchasers of birds and breeders. Many a fancier has from this cause been unfairly charged with selling eggs from inferior stock. As we said when speaking of strain, every breeder should make up his mind what type he wishes to produce and stick to it. After a few generations of careful selection he will find that his ideal is much more nearly attained, and, in addition to the satisfaction of being able to calculate to some extent upon the produce, he will see a new beauty in a lot of birds strikingly alike. Often have we remarked on the beauty of numbers of birds. We have lately for the first time, for convenience sake, put twenty hens of one variety in a run together, and have come to the conclusion that though for years we have been accustomed to see good specimens of the breed, yet we have never seen it to such advantage as in the case of this uniform lot of hens. We deprecate, then, this common system of mating extremes together as the rule; of course, in exceptional cases it may be necessary to correct a tendency to some fault in a strain.

This brings us to the real difficulty of all breeding for feather—one that cannot well be surmounted, save by practice and observation. In all the gallinaceous race (with probably the solitary exception of the Guinea Fowl) there is a great dissimilarity between the male and female. The difficulty, then, is to know what particular points in the one sex correspond to particular points in the other. A few of them, of course, are obvious, but many of them are not so. For instance, only personal experience or perfect confidence in that of an informer would assure us that the Wheaten Game hen will produce a more brilliant cock than the ordinary Black Red, that the Silver-Grey Dorking hen with deep robin breast will probably be the mother of cockerels with striped neck hackle, that there is some mysterious connection between spots on the breast of a Dark Brahma cock and good pencillings in the hen, and of almost innumerable similar correspondences in the Hamburg family. These facts can, to some extent, be learnt from books, but experience will teach them with far more minute accuracy. It will probably be found, as we have before observed, that it is not easy to make a strain of some varieties famous for the beauty of both sexes. In this case a little may be sacrificed

in each, or the fancier may be content to be famous for the one, and to put up with such a type of the other as naturally produces the one in perfection. Anything is better than to insist upon types in the two sexes which do not correspond, and involve the breeding of cocks and hens of, to all intents and purposes, two distinct races.

We will briefly, then, recapitulate the points which we would call to the attention of an inexperienced fancier. 1, That as a rule the offspring are most influenced by the form of the male parent, by the qualities of the female. 2, That matching of birds with contradictory extremes should be avoided, and all breeding stock, as far as possible, selected, as near as may be, from an ideal type. 3, That the natural correspondences between the feathering of the two sexes in any one breed should be studied and allowed for. We trust that attention to these principles will smooth the road towards the formation of a strain.—C.

GOATS.

THESE most useful and withal tractable animals are making slow but sure progress in the estimation of the people. The milk produced by them is a luxury and health-giving comfort, not only to children but to persons of any age, a luxury in so far as the milk is equal if not superior to cream usually to be had. There is, unfortunately, a certain amount of prejudice against goats, but I trust that persons possessing fallacious notions will cast their prejudices to the wind and give these animals a trial, and they will find that the advantages accruing from their possession will far outweigh the sentimental notions formerly harboured against them.

It may here, perhaps, be not out of place to give my own experience, unfortunate though it may be, to serve as a warning to others. Goat No. 1 was a short-haired, not very desirable breed, costing 10s. She was when purchased declining in milk, giving about one quart per day—certainly not a large quantity; but considering that she was fed on all kinds of garden refuse, her keep costing, in fact, nothing, and a not very prolific milch breed, I felt quite satisfied. In the course of the autumn the poor beast ate a quantity of trimmings of geranium cuttings, next morning she was found rigid from the effects of prussic acid contained in the geraniums. Such was the sad fate of goat No. 1; but having from childhood been accustomed to them, and as the milk had been considered quite a delicacy by all concerned, I resolved to try again. Goat No. 2 was a long silky-haired species, coming from a clergyman's stable where oats, hay, and bread had been her daily fare. Her price was £1 15s. I had in the first instance the greatest difficulty to induce her to eat any green food; she was rapidly losing flesh and milk, but by a dint of a little coaxing and an occasional feed of corn she eventually took to my manger. When in full milk she gave two quarts per day, gradually falling off to a pint a day about two months before I expected her kidding. This happened the beginning of April, twenty-one weeks or a little over. To please my partner I kept both the young ones, both being he goats. I killed one when two months, the other when three months old. The meat was pronounced by my friends who were not cognisant of what they were eating to be most beautiful and tender lamb, and far better it was, in my opinion, than lamb. If, however, milk is the only desideratum, the kids ought to be killed immediately after birth. If regularly and constantly milked and tolerably well fed, some goats will continue to produce a full supply of milk for twelve to fourteen months before Nature asserts her rights. To cut the story short, goat No. 2 was one day by a well-meaning but incautious neighbour fed to repletion with a large quantity of mashed potatoes. This resulted in her death in spite of every possible care and medicine. This finished my experience with goat No. 2, but as soon as I can purchase another long-haired one I will make another attempt at goat-keeping.

To sum up, I would advise intending goat-keepers to purchase only the long-haired breed. Be careful about gorging them with short mowings from lawns, soft pulpy food of any description. But with ordinary care and attention a supply of rich wholesome milk is obtained, costing little or anything. I understand that the newly instituted Goat Society will give any information required, and also advise as to the best breed, where to purchase them, &c. Such practical and useful information, and any other hints necessary for the furtherance of the knowledge of goats, would be gladly welcomed by a—SWITZER.

THE ABBOTSBURY AND WEYMOUTH SWANNERIES.—Mr. Mark Hopson, steward to the Earl of Lichester, the owner of the first-named of these favourite swanneries, comprising above 1600 birds, has just supplied some interesting facts. It is stated that 1400 of the birds are on the Fleet, and both the swanneries are steadily increasing in numbers. The Weymouth swannery was started in 1878, when Lord Lichester presented to the town seventy-two, and it is now kept up from the funds of the Corporation. The Abbotsbury swannery, which has been in existence hundreds of years, was rapidly diminishing a few years ago, as in August, 1866,

there were only 646 birds, 157 being missed. Since that time, with more careful looking out on the Fleet waters, the numbers have progressed satisfactorily, until the Abbotsbury swannery numbered 1511. The Abbotsbury birds are counted twice a year, and at the last counting the two swanneries numbered 1604. The average number of missing birds from Abbotsbury during the last fourteen years (not including the present) has been a little over fifty. This year only twenty-one birds have been missed. This is regarded as very satisfactory. The last winter, though very severe, has had no ill effects on the Swans.

VARIETIES.

Just on the eve of going to press we received a list of the awards of the Birmingham Columbian Society's Show of fancy Pigeons which was held on the 1st inst. Seven hundred pens were exhibited—namely, 827 of single birds bred in 1879, and 878 of birds exceeding one year old. We are only able to say that the cups for Black, also for Dun Carriers, were won by Mr. H. Allsop; for Blue, Yellow, and White Pouters by Mr. H. Pratt; for Black Pouters by Mr. J. D. Lang; and for Short-faced Dutch Antwerps and for Chequer Antwerps by Mr. T. Clulee—all birds bred in 1879; and Mr. H. Allsop won the cup in the any age section in the Black Carrier cock class. The other awards will be given next week.

It has been decided to hold the Exhibition of the Wirral and Birkenhead Agricultural Society for 1890 at Birkenhead on September 8th and 9th. Mr. W. A. Graham is the Secretary.

We have the schedule of the Yeovil Show of Poultry, Pigeons, and Cage Birds to be held on January 21st and 22nd, the same days, unfortunately, as the Shrewsbury Show. There are 42 classes for poultry, to which besides three prizes in each class 11 silver cups are to be awarded; and 41 classes for Pigeons with 12 cups. The classification of Cage Birds is good, and the prizes are liberal. There are four special classes for dead poultry. We observe that the London and South-Western Railway and Great Western Railway have consented to issue tickets at special rates for the double journeys. The Secretary of the Show is Mr. Robert Leach, Middle Street, Yeovil.

THE following shows the number of stock exhibited and the prices realised at the annual fat stock Smithfield Markets held since 1844. The prices refer to stones of 8 lbs.

Year.	Beasts shown.	s.	d.	s.	d.	Year.	Beasts shown.	s.	d.	s.	d.
1844	5713	4	0	4	6	1862	8430	3	4	0	6
1845	5328	3	6	4	8	1863	10,870	3	0	5	3
1846	4570	5	0	5	8	1864	7130	3	8	5	8
1847	4282	3	4	4	8	1865	7530	3	4	5	4
1848	5943	3	4	4	8	1866	7340	3	8	5	6
1849	6708	3	4	4	6	1867	8110	3	4	5	0
1850	6341	3	0	3	10	1868	5320	3	4	5	8
1851	6103	3	8	4	2	1869	6728	3	6	5	2
1852	6271	3	8	4	6	1870	6425	3	6	5	2
1853	7057	3	2	4	10	1871	6320	3	10	5	6
1854	6181	3	6	5	4	1872	7580	3	8	5	6
1855	7000	3	8	4	2	1873	6710	4	4	5	6
1856	6748	3	4	5	0	1874	6890	4	4	5	8
1857	6354	3	4	4	8	1875	7680	4	4	5	6
1858	6434	3	4	5	0	1876	7020	4	4	5	4
1859	7580	3	0	5	4	1877	7510	4	4	5	0
1860	7840	3	4	5	4	1878	6580	4	4	5	0
1861	8840	3	4	5	0	1879	5340	4	0	5	4

THE production of the powerful fertiliser nitrate of soda is almost exclusively confined to the province of Tarapaca in Peru, and in the pampas regions running north and south about eighty miles, and about twelve miles from the western shore. This vast plain, situated 8000 feet above the level of the sea, is at the foot of the Andes Mountains. The district is a rainless one, and the salts exude from the ground in some places from 7 to 8 feet in depth. It is frequently found quite pure, but when not so its impurities are extracted by dissolving in water and evaporating to dryness, either by the heat of the sun or by fuel. The chief port from which the nitrate has to be embarked is Iquique, a distance of ten miles from the nitre beds. Formerly the nitrate was conveyed upon the backs of camels or mules to the port, which, together with the expense of purification, made the total cost of production quite excessive. Since then a railway has been constructed, and the nitrate is obtained at a more reasonable expense. It needs to be applied to the land with care, and from 40 to 80 lbs. mixed with twice the weight of common salt is regarded as sufficient for an acre. (*American Cultivator*.)

THE *Prairie Farmer* states that nearly thirty steamers, each averaging four thousand tons actual carrying weight, leave America every week for England laden with provisions of various kinds.

BEE STOCKS AND THE LATE FROST.

THE opportunity the departure of the late bitter frost and dismal succession of fogs has given for examining the condition of the "poor bees" has, no doubt, been gladly hailed and eagerly used by many brother bee-keepers. With the idea of comparing notes, and so estimating by the results of the plans adopted, I

give some account of the condition of things as I found them on Monday, December 29th, really the first day since November 18th on which the thermometer has stood high enough to allow the bees to fly in safety. It is true that on Monday, December 22nd, some hives have partly taken advantage of a warmer hour or two in the afternoon to get a cleansing flight, but practically at the date first mentioned the bees had endured an enforced confinement of forty-one days, during which the air had not only been for the most part intensely cold, but the barometer had stood high with dense fogs—two conditions, both increasing conductivity, and so augmenting the severity of the trial to which our stocks had been subjected. Anxiously awaiting my opportunity for commencing an experiment with a twin hive, I determined on the Monday aforesaid to transfer two skeps, allowing the bees only about two hours' dance in the genial air, which under the circumstances was as necessary to the comfort of the manipulator as of the poor distended insects. These skeps had been carefully housed in Stewarton cases, the interspace being well filled in with shavings and sacking laid in several thicknesses over the top.

The first skep taken in hand had its combs cut out in succession, and the bees thrown and brushed on to a board at the mouth of the twin hive, which now stood exactly where the entrance of the skep had formerly been, while three stored combs taken from as many stocks had been previously placed within to induce the bees the more readily to enter. The colony seemed both strong and healthy, and the deaths, judging by the condition of the floor board, had not been excessive, but the hive contained neither eggs nor brood. The denuded combs were now taped into six frames, two of which were added to the evicted bees so as to make these combs up to five in number, while the remaining four were placed in the other half of the twin ready for the use of the inhabitants of skep No. 2. This was soon drummed in the usual manner, when the bees responded immediately by an upward march, and the queen was secured almost at once. The forced swarm was thrown upon the board placed to receive it; but in cutting out the combs, in order that they might be trimmed and taped into frames as before, I was surprised to find the middle comb containing about 20 square inches of advancing brood, the centre of which was sealed, proving that the queen had laid on the 19th and 20th of December, when frost held us with strong grip. Comparing the condition of this hive with others I have recently seen the imperative necessity of keeping skeps dry on the exterior. A soaked skep is a conductor of heat. When frost prevails, the air around such hives is ever stealing away the very vitality of the cheerless colonies within. For consumed (scientifically oxidised) honey in heat, the production of which, if demanded in excess, requires exhaustive labour on the part of each bee, wearing down its life and draining away its stores until, too often, death finishes the unequal but unnecessary conflict; and even when frost goes the sun breaks forth, the moisture by its evaporation keeps down the internal temperature, so that the bees, especially if there be any wind, are hardly better off, as any who have had a ducking and have dried their clothes while wearing them will readily believe. To-day (January 1st) I find the combs all beautifully fixed, admitting of the tapes being cut without risk.

My frame hives have stood this frost most excellently. In ten examined eight had brood, one sealed brood in three combs of the seven it had been allowed. The aggregate of brood being about one and a half Woodbury frames, I cannot but regard this as surprising. The bees are exceedingly strong, covering the frames densely. This hive gave me wonderful results during last summer—results which would have been considered respectable in any year. It has been protected above, like all my frame hives, by from 3 to 4 inches of chaff in a tray, while it is of the pattern which bears my name and was made in 1878. It is substantial, double-walled, with about three-quarters of an inch in air space. These points are mentioned merely to show that almost every really good hive may have protected its bees as well as this. Nor is the secret in the queen, for the black mother of last year has given place to a Ligurian. Strong population, contraction of hive, and effective protection with ventilation, has secured here what it will give wherever tried. The bees, in addition to well-stored combs, have had a cake of sugar and pea flour like to those of which our good friend Mr. Raitt gives the method of making a few weeks since in this Journal. Another stock had a sealed patch about 6 inches by 4 inches, showing again that low temperature without, if properly provided against, will not prevent the work of the hive going forward, even amongst bees that have previously endured long confinement, and corroborating Mr. Hunter's position at the *Conversazione* in October last, to which some were disposed to take exception. Of my single-sided hives, one with eight combs had suffered much more than those in hives of greater solidity, but yet the deaths were not seriously numerous; but another similar one with six combs had lost very severely. In the first-mentioned the clear outside combs had contributed doubtless to the protection. The excellence of the chaff cover is attested by the dry healthy condition of the stocks, which is in strong contrast to the results obtained by covering with carpet

as recommended by one writer in particular, but against which I have before protested both on scientific and practical grounds.

Some artificial pollen without salicylic acid placed for experiment in an outside frame is badly mildewed, while that inserted centrally has in many cases just the bottom of it yet remaining unconsumed. This pea flour was put into perfectly new comb, and there reached the cell bases. A remark in a contemporary that the Editor cannot get it into the cells because of the contained air, notwithstanding the rude trial to which the weather has put all our methods, leads me to this conclusion that, however well skeps may winter bees when amply protected, they are in no way equal to double-sided frame hives (especially if the latter contain chaff between the inner and outer skin) with chaff covers above and chaff-packed dummies, and the bees confined to so small a number of combs that the interior is kept warm in every part. The skep has hitherto been retained by not a few because of its admitted excellence as a wintering hive; but the bar-framer, as now managed in good apiaries, is upon its own ground beating it out of the field, because the skep is here as everywhere intractable, while the chaff-packed dummy gives to its rival an elasticity even much beyond that possessed by the excellent Stewerton, the virtues of which in this particular have had a talented exponent in the "RENFREWSHIRE BEE-KEEPER." In one case, in a tall experimental hive with combs 17 inches deep, the deaths have been numerous enough to much weaken the stock, but these are the direct result of improper form added to thinness of wall, here only three-quarters of an inch as against $2\frac{1}{2}$ inches, the thickness of my wood and chaff hives.

Anyone who may feel disposed to inspect the stocks to which I have referred shall be welcome.—F. CHESHIRE, *Avenue House, Acton.*

LOSS OF BEES BY CHILLING.

IN winter bees leave their hive and fly about for a few minutes in mild weather. Often in doing so many of them are chilled and never return to their hives. After long confinement by cold weather, they come out in great numbers on the first mild day. Yesterday (December 28th) was fine here, and the bees came out in great numbers, seeming to enjoy themselves very much for two or three hours. Their dead were carried out and flung over the flight boards, but many living bees were found motionless on and around the hives. About a quart of these were gathered into a common flower pot, covered and placed over the kitchen range to be gradually warmed. In a few minutes they became very noisy, and when liberated at once flew back to their hive.

Some winters hives lose their bees fast by chills in these unseasonable flights; and as most hives this winter have not large populations all care should be taken to prevent unnecessary loss. For some years I have had about forty hives (in winter) standing within 8 feet of each other. After winter flights our custom has been to sweep up the chilled bees with a hair brush, place them in a straw super, and warm them into health and activity near the kitchen fire. By pursuing such a course many hives have been saved from great losses by chills. Some writers have thought that the loss of bees in winter is caused by their exhausting efforts to evacuate after long confinement. This question I cannot now consider. All I wish the reader to remember is that heat restores chilled bees to animation, even those that are apparently dead.—A. PERRIGREW.

THE PHYSIOLOGY OF THE HONEY BEE.—No. 1.

THE honey bee is pre-eminent among insects for the marvellous instincts it possesses, as well as the perfection of all its bodily organs. Before we can attain to anything like certain success in the art of bee-keeping we must make ourselves thoroughly acquainted with at least the main features of these instincts, the habits to which they lead, the different organs, and the magnificent works in architecture and economy which are their results. In other words, every bee-keeper should be at the same time a student in the school of natural history. In this and following papers we propose to occupy the attention of our readers by detailing the leading points in the physiology of the bee, glancing only cursorily at those points that mainly concern the student but entering more fully into those that are of practical importance.

The honey or hive bee (*Apis mellifica*), according to the authority of Mr. F. Smith of the British Museum, is only one of 211 species of British bees. It is distinguished among these by its habit of remaining social throughout the year, the others being either solitary in their habits or social only during the summer months. This constant character of its societies creates the necessity for laying up such stores of honey and pollen, and also for its habit of casting swarms, as a guard against the extinction of the species. The various races of domesticated bees found in Europe are only varieties of the species, differing in the minor points of colour, size, and temperament. They can therefore be readily crossed by breeding, and it is but natural to suppose that the introduction of foreign varieties into this country must tend to

improve the race if care be taken to work towards desired characteristics.

The existence during summer of three kinds of bees in every normal hive is well known to bee-keepers; even yet, however, many are ignorant of the functions of the queen, worker, and drone respectively. When Shirach discovered last century that queens could be raised from eggs laid in worker cells, Riem that certain workers occasionally laid eggs, and Miss Jurine, under the direction of Huber, that the worker possessed rudimentary ovaries, the female character of both queen and worker was established and a great impetus given to the art of bee-keeping. Probably our own Scottish Bonner was the first to make practical use of the discovery, which he seems to have made for himself before he had heard of Shirach's discovery. He practised the rearing of queens and the making of artificial swarms with great success. At the present day not only does every intelligent bee-keeper occasionally practise in this line on his own account, but great establishments have arisen in Italy, America, and elsewhere for the sole object of raising queens for sale. In this way discoveries in science become the basis of success in practice. The queen, then, is the only perfect female in the hive—the mother bee, quiet in temper, exceedingly fertile, and destitute of the building and gathering instincts. The workers are the typical bees, those who do the work. They are really undeveloped females, and in rare cases will take to egg-laying. The drones are the males, and are usually massacred at the close of the swarming season. The queen is hatched from the egg in sixteen days, the worker in twenty-one days, and the drone in twenty-four days.—WILLIAM BAITT.

OUR LETTER BOX.

BRAHMA PULLETS (J. R.).—Pullets' eggs should not be used for sitting if hens' eggs can be obtained. Six hens are enough for one male bird. From one to five years old are good breeding ages.

FOWLS LAYING SOFT EGGS (Miss C.).—As your fowls have had plenty of lime and green food they have probably inflamed egg organs. As a remedy let them have a low diet of boiled mashed potatoes and boiled rice for a week or more, giving a dessert spoonful of castor oil and a pill containing one grain of calomel and one-twelfth of a grain of tartar emetic every second day for a week.

PALM NUT OIL (J. P. H.).—We recommend an application to Jno. Bunell and Co., 34, Mark Lane, London, with reference to the value and purchase of palm nut meal of the best makers. We can recommend Mr. Alfred Sibber's work on food for stock-feeding and manures; but we are unable to recommend any book or books treating practically upon the manufacture of vegetable oils from seeds, and nuts.

GOAT KEEPING (Henry Mills).—You will find an article on page 24 of the present issue, from which we think you will obtain the information you require. Goats are extensively kept in Switzerland, but the misfortune of our correspondent in attempting to keep them in England will be more useful to you than a register of his successes on the mountain side of his native country.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. $51^{\circ} 32' 40''$ N.; Long. $0^{\circ} 8' 0''$ W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.						Rain.
	Baromet. ter at Sea and Sea Level.	Hygromete- ter.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature.		In sun.	On grass.	
		Dry.	Wet.			Max.	Min.	deg.	deg.			
1879-80. Dec. Jan.	Inches.	deg.	deg.	S.W.	deg.	deg.	deg.	deg.	deg.	deg.	In.	
Sun. 28	30.116	44.8	46.4	S.W.	38.1	52.8	37.5	52.4	35.1	0.05	—	
Mo. 29	30.012	44.2	42.7	S.W.	35.2	52.7	43.2	65.0	36.6	—	—	
Tu. 30	29.820	41.9	39.4	S.W.	30.1	48.7	36.7	65.7	29.8	0.50	—	
We. 31	29.710	47.1	44.7	W.	35.6	53.4	34.4	52.0	28.5	0.85	—	
Th. 1	29.921	52.3	51.3	W.	38.9	55.4	46.1	63.6	43.7	—	—	
Fri. 2	30.073	50.2	49.0	W.	41.2	52.7	48.6	73.0	45.8	—	—	
Sat. 3	30.459	38.7	38.3	W.	40.3	46.5	37.2	72.1	51.0	—	—	
Means.	30.023	45.9	44.5		37.3	51.7	38.1	63.7	34.3	0.05	—	

REMARKS.

28th.—Rain during night and slight in morning, damp but free from fog; fresh S.W. wind during the day; night rain after 9 P.M., and much warmer.

29th.—Clear sky; fine day with bright sunshine, moonlight evening; windy.

30th.—Fine in early morning, sharp shower at 11 A.M., hail and gusty wind at 6.51 P.M., lightning and loud thunder at 0.56 and 0.57 P.M.; equally the rest of the day, but very clear moonlight night.

31st.—Squally, with sharp showers at intervals, more or less rain all day; cloudy evening.

1st.—Warm gusty day, clear bright sky in afternoon, nearly overcast at night.

2nd.—Bright sun in morning; windy but fine pleasant day, and very mild.

3rd.—Cooler; a beautiful day, crisp air and bright sunshine; damper in evening.

The warmest and wettest week for upwards of two months, but the barometer remains high.—G. J. SYMONS.

COVENT GARDEN MARKET.—JANUARY 7.

We have still a good supply of common hothouse Grapes, but finer sorts are in demand and realising better prices. Importations consist of Canadian Apples and Californian Pears, both of which are arriving in good condition, as also Pines from St. Michaels and Madeira. Trade improving.

WEEKLY CALENDAR.

Day of Month	Day of Week	JANUARY 15—21, 1880.	Average Temperature near London.			Sun Rises.		Sun Sets.		Moon Rises.		Moon Sets.		Moon's Age.	Clock after Sun.	Day of Year.
			Day.	Night.	Mean.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.			
15	TH	Royal Society at 8.30 P.M. Linnean Society at 8 P.M.	41.7	28.9	35.3	8 2	4 17	9 24	9 14	4	9 33	15				15
16	F	Royal Institution at 8 P.M.	42.0	31.0	36.5	8 1	4 19	9 29	10 28	5	9 54	16				16
17	S		42.6	28.7	35.6	8 0	4 20	9 55	11 40	6	10 14	17				17
18	SUN	2ND SUNDAY AFTER EPIPHANY.	42.6	21.3	36.9	7 59	4 23	10 11	morn.	7	10 34	18				18
19	M		43.1	30.6	36.9	7 58	4 23	10 28	0 51	8	10 53	19				19
20	TU	Robert Sweet died, 1835, wt. 52.	42.4	30.6	36.5	7 57	4 25	10 50	2 1	9	11 11	20				20
21	W	Society of Arts at 8 P.M.	42.9	32.0	37.5	7 56	4 27	11 19	3 8	10	11 29	21				21

From observations taken near London during forty-three years, the average day temperature of the week is 42.5°; and its night temperature 30.4°.

MUSHROOM GROWING.

IN large establishments, during the winter months especially, the Mushroom is amongst choice vegetables what the Grape is amongst choice fruits—it is indispensable. Another fruit or another vegetable may fall short for a week or two occasionally without being missed, or if missed, other things being plentiful, some substitute can generally be found; but let the supply of either Mushrooms or Grapes fail, there is at once a blank which no substitute can fill, and the gardener's peace of mind is gone.

Of the two (Grapes or Mushrooms), I have little doubt that the greatest amount of trouble is caused by the latter. Ordinary people can generally grow ordinary Grapes, and if they fail the cause of failure is easily ascertained; but Mushroom-growing to many people has unfathomable mysteries. Many a bed receives the best possible attention for weeks after all the spawn has been killed, and then the nurseryman rather than the attendant is blamed. My experience leads me to think that no respectable nurseryman sends out bad spawn, unless it be an odd brick or two, and certainly nothing is easier to judge the quality of at sight than Mushroom spawn. Possibly it often deteriorates after it leaves the nurseryman's hands through being kept in a damp place, and it is very essential to look after this. Bricks when broken up should show the spawn with a cloudy appearance. There will generally be some white threads in it; but it must be understood that these when visible to the naked eye are not the spawn which will produce Mushrooms—they are too far gone; that which will produce the noble esculent is like a greyish mould running through a good portion of the brick, and in which the separate threads cannot be discerned by the naked eye. A practised hand can, of course, tell whether a given piece of a brick is likely to produce anything, and he need only put the living piece in; but for the uninitiated it is best to break-up two or three bricks at one time into pieces about the size of a bantam's egg, mix them all together and insert rather closely, say 8 or 9 inches apart. About the manner of inserting the spawn, which I take to be a very important matter, I will speak presently.

I found a place here called a Mushroom house which I partly described in your columns a year or two ago, than which, I think, nothing could have been worse designed. It is a detached span-roofed building above ground, with walls only one brick thick, a slate roof, and a badly-fitting door at the east end. Of all places the Mushroom house should be one which the natural variations of temperature do not affect, but mine in the condition I found it would feel the effects of a change of weather in an hour. There is a very deeply rooted notion that a heating apparatus and a thermometer are all that are required to prevent any ill effects from such a faulty structure, but nothing can be further from the fact, and it is very probable that nothing causes a greater number of failures than this notion. I believe that if you give the dullest individual in the horticultural fraternity a place where the temperature naturally

keeps continually between 53° and 55° he must grow Mushrooms in spite of himself, and he would naturally wonder why his more skilful brother sometimes fails. The fact is, that the moment you begin with artificial heat other than that produced by fermentation many changes take place. You may keep your thermometer from varying the twentieth part of a degree, but do not suppose you have an even temperature or the same degree of humidity all over the house, for it is far otherwise; a circulation of air immediately commences, and that is just one of the things the Mushroom does not want. Fire heat, too, necessitates damping, and that is another evil. I never now use a drop of water in the Mushroom house. Firing, too, necessitates a frequent opening of the door, which at all times in cold weather is to be avoided. I stated last year how I had lessened the fluctuations of temperature in my house by covering the walls with litter, blocking the door at the east end, and making an entrance from a rude passage in a less exposed part. Since that was done, in the autumn of 1878, I have not had a single bed which was not exceedingly productive; nevertheless I have recently made what I consider important though simple improvements, not the least of which is, that instead of covering the beds with litter or soft material, wooden shutters are used for the purpose, resting on a sill at the back and on a strip of board in front, which keeps them about 2½ inches above the soil. They are made so as to fit almost perfectly air-tight when required, and they can be held in any position by tilting. Setting aside the matter of cleanliness and economy of time, I find these shutters very useful for maintaining an equable temperature and atmosphere when the weather changes.

I do not know that I have anything out of the common way to say about the preparation of material for the bed, but I will briefly describe the system. Droppings are collected every morning from the stable litter and placed in an open shed, where they are turned over every day to prevent burning. When there is a sufficient quantity for a bed it is removed to another open shed, where it is allowed to heat a little, and the turning is continued for ten days or a fortnight, till it becomes sufficiently dry that it will not bind together much when squeezed in the hand. It is then taken to the Mushroom house and made-up as firmly as possible to a depth of 11 or 12 inches. The firmness prevents it heating too violently, and consequently drying and exhausting itself, and causes it to retain the heat for a long time. It cannot be too firm. A thermometer is placed in the bed as soon as made, and it is expected in a few days to show a temperature of 85° to 100°. As soon as the heat is declining the spawn is inserted; 95° for a day or two will do no harm, but we must be sure that the temperature is declining, for a higher one would probably be fatal.

The spawn when broken to a suitable size should be pressed-in with the hand just below the surface, so that the droppings may lie quite close to it on all sides: a dibber would probably leave a cavity, and that is undesirable. When the temperature has declined to 80°, about an inch of fine loamy soil is placed over the surface, and if this soil is at all heavy it should not be pressed down firmly but merely made smooth on the top.

If the dung has been prepared in the way I have described and made-up sufficiently firm, it will generally keep up to from 70° to 75° for three weeks without any covering besides the soil, and this is a suitable temperature for the spawn to run. If it goes down below 65° before Mushrooms appear covering must be resorted to, but 65° or even 60° is high enough when the bed commences bearing. It usually takes from four to five weeks from spawning till Mushrooms appear; sometimes, however, they will show in three weeks, and I have known them eight weeks in coming and then do well, but not within my recent experience.

My house now requires no fire heat excepting during the most severe frost. 55° is the temperature to be aimed at, and it should never be exceeded; 54° is better than 56°.—WILLIAM TAYLOR.

AURICULAS.

MR. SLATER on page 5 says he feels convinced that the modern system of Auricula culture will not bear comparison with that of bygone days. It may be feared that he has not lived in the present as in the past, for this belief is just as true as that the modern system of railway travelling will not bear comparison with the accommodation and rapidity of the bygone coaching days. I can remember seeing Auriculas under the ancient wooden shutter treatment, and I would as much prefer that to the light and airy glass house where I can be among the plants in all weathers as I would, if possible, rather travel outside the four-days coach from London to York than coddle down by "the Flying Scotchman" in a few hours.

In harmony with Mr. Slater's theory about Auriculas, it is a great mistake to treat passengers nowadays as only half-hardy when they used in bygone times to be handled much less tenderly; and when we know that there are habitats of healthy human life within the Arctic Circle, even as on the snowy Alps there are thriving wild Auriculas that bloom and multiply without a florist's care. However, I do not see the fairness of saying that under "the modern treatment" we consider the Auricula but half-hardy. By that term I presume Mr. Slater means not able to bear much frost. There is not one of us, so far as I know, who fancies frost will kill Auriculas. In all I have ever said on Auricula growing I have distinctly stated that no dry winter frost that we can have will kill these plants. In consistency herewith very many of my Auriculas are frozen every frosty winter. I have had small seedlings in seed leaf exposed to many degrees of frost; indeed the glass was not protected when the mercury outside fell to within 2° of zero, and large plants have suffered as little as others.

But I maintain that against water at unseasonable times these highly bred Auriculas are not proof. In this sense they are not to be trusted for a constitution more than half-hardy, but the kind of delicacy they possess should be carefully borne in mind. Where frost will harm neither these nor our Tulips, wet will. I suppose there is no sodden soil round wild plants sleeping in the depth of an alpine winter. They are protected, cold, and dry; and the modern system of growing the Auricula during the winter to keep them airy, cool, and dry overhead, sheltered from bitter winds, and with the precious element of daylight secured to them, that can surely never burst green leaves. Everyone will agree with Mr. Slater that "plants ought to be treated as found in native habitats;" but then there are no wild green, grey, and white-edged Auriculas to compare with those that florists have elaborated; and I would rather trust a plant of Lancashire Hero out upon an alpine slope than under the dark old draughty wooden shutters of the olden time.

I can remember Auriculas as far back as 1849, and do not think the plants grown now are poorer than they were then. As to the mere size of the plants in spread of foliage, much depends upon the varieties grown. A collection of valuable plants, containing the shy growers and those of short thick foliage and spare habit, can naturally be never such a spectacle for grass as a number of coarser and more robust varieties. Six pots of Robert Trail or Colonel Champneys would cover a multitude of Lancashire Hero or George Lightbody; but upon which set would a florist, even a young one, rightly place the higher value?

Mr. Slater recommends a sweet and natural compost for these plants, and all its ingredients are well known and approved, and there is nothing here in which the modern system is opposed to him. He declares that they must have plenty of air and moderate watering, and this is not more the ancient than the modern rule. He calls the green fly bad names, and

we moderns agree with him that the aphid is a plague, though I think the soft soap dip is his happiest dispatch, with the brush remedy Mr. Slater commends for white plants, on which it looks a pity to destroy the frosted silver. If by the modern system Mr. Slater means to condemn the wintering and blooming of the most beautiful and rare Auriculas in a house where they are near the light and air and can have every possible attention readily accorded them, and can be intimately enjoyed through all the fascination of their spring development, then I disagree with him on the ground of experience; and I think no one is worthy of these Auriculas who, having it in his power to afford them and himself the highest advantages and comfort, thinks makeshifts are good enough for them and worthy of the owner.—F. D. HORNER, *Kirkby Malzeard, Ripon.*

GROWING PEAS FOR PRIZES.

THE following is the method of cultivating Peas which I have practised with considerable success:—A quantity of pig manure is dug into the ground in November or December, and early in January it is thrown into trenches 3 feet apart. The next operation is to deepen every alternate trench about 12 inches and fill them with rather fresh manure, which supports the Peas in hot weather better than old manure does.

About the first week in February I sow the seeds, after covering the manure with about 2 inches of soil. Over the seed is placed about an inch of soil and half an inch of coal ashes. The ashes are beneficial in two ways: first, by protecting the seeds from frost; secondly, by preventing the ravages of slugs on the young plants. I then bend some Willows over the rows and cover them with nets, which are secured by a stake or peg at the sides. Should the slugs be troublesome as the Peas progress I strew some gas lime a few inches from the stems and the Peas are safe. When the young plants are about 4 inches high the nets are removed, and sticks are placed to support them. If any of the rows are backward in growth they are covered with glassed sashes for a few days, and they soon become as forward as the others. When the haulm is becoming tall I watch the plants every day, and remove those that are weak, and tie those that appear strong to the sticks. As soon as sufficient flowers have appeared and pods are forming the tops of the plants are pinched off, which strengthens them very much and induces the production of longer and broader pods. I carefully examine the rows, and where two pods are hanging together the smallest is removed, and the other increases rapidly in size. If the weather is dry I use a stimulant use blood diluted with an equal proportion of water. The blood for this purpose requires to be stirred when warm, the coagulated portion being removed. If the weather is wet I place the undiluted blood upon the ground a few inches from the Peas, and cover it with soil.

As the show day draws near, if some of the varieties seem likely to be late, glass is placed over the rows for a few days and it greatly assists them. On the other hand, should some of them be too forward, they are shaded with calico or any light material, which effectually retards them. I always gather the pods late in the evening—say eight o'clock, when there is a dew on them. Every pod is clipped from the stem with a pair of scissors, and they are placed in a box with as much care as if they were Grapes. The box is then placed in a hamper. I leave home by the 9.45 train P.M., arrive at King's Cross about 3.15 A.M., proceed to South Kensington, stage my specimens, and leave the rest to the Judges.—AMATEUR.

P.S.—I wish to say Messrs. Carter's two Peas, Telegraph and Telephone, are with me quite distinct, the Telegraph being very dark green in foliage and larger in pod than Telephone is. I consider Little Wonder a very grand Pea, taking it all round.

[The Judges frequently award the first prize to the Peas of our correspondent.—EDS.]

NARCISSUS PAPYRACEUS.—Your correspondent (see page 7) did well in praising *Narcissus papyraceus* (Paper White) as a charming and fragrant species when forced. It is one of the most lovely of all the wild flowers of the Riviera, but it is as a hardy border flower that it is perhaps less generally known, and on which I would beg to say somewhat of its adaptability. In Messrs. Osborn's Fulham Nursery clumps of it were long ago planted under the front wall of a plant store, and its memory serves me rightly they flower in January or February, lovely clusters of snowy blossoms. Once a defective spout over head drenched them during winter, but they seemed to like the

cold bath rather than otherwise, just as the vernal *Crocus* enjoys its annual submersion in the Nottingham meadows. Planted at the foot of warm stove or plant-house walls this and many other bulbs succeed perfectly and are most attractive.—**DUBLINENSIS.**

HARDINESS OF PRIMULA JAPONICA.

ABOUT thirty-five years ago when walking through Leadenhall Market I saw a grey wild goose on a stall, and being a keen naturalist asked the salesman to allow me to handle it to see what sort of wild goose it was. He answered, "It's no particular sort, sir, only a wild goose." In the same way in those days gardeners if they spoke of Primroses would mean "no particular sort, only Primroses;" for besides Auriculas and the greenhouse *P. sinensis*, which in popular language used to monopolise the name of the Primula, it was rare to see any Primrose in cultivation except the single and double and Polyanthus varieties of one species, *Primula veris*. It is very different now, when the catalogues of some nurserymen contain lists of about thirty distinct species claiming to be hardy, besides many hybrids and varieties, and the list is fast increasing. Of some of the newest and prettiest, as *P. capitata* and *P. rosea*, the claims to be quite hardy are perhaps not yet sufficiently established; but if correspondents who write to the gardening journals would kindly mention the place and the conditions and the degree of cold in which they have found them hardy, the information would be most acceptable to gardeners.

I grow many species of Primula, but wish to speak now especially of *P. japonica*, having observed with surprise from a note on page 10 of the *Journal of Horticulture* that "W. J. M." suspects it of not being hardy in the favoured climate of Ireland. In an unkind situation and cold clay soil in Cheshire, where many plants called hardy refuse to grow, I find that *P. japonica* is not only hardy but comes up freely from self-sown seed both on the rockeries and in the mixed borders, and a large proportion of the seedlings establish themselves where they come up, or do well if transplanted any time in autumn. We are told that seed of *P. japonica* is very capricious, and that it sometimes germinates after being a year in the seed pans. I cannot say for certain how long the seed may have lain in the ground before my seedlings appear, but last year certainly no seed had ripened before the end of June, when I first noticed them. The strong seedlings make good flowering plants the next year. What becomes of the weak plants I never took the trouble to notice. Whether they perish or are raked off in spring—I never allow my flower beds to be dug—I cannot say; but this year I brought some small seedlings taken up at the beginning of November to a garden in the north of Lancashire, where I am spending the winter, and now after about 25° of frost the crowns look quite healthy, and they will probably flower before next June. Of course the leaves are killed; but is it the habit of the genus *Primula* generally, or of *P. japonica* particularly, to be evergreen? It is true that our native *P. veris* becomes so in gardens and in shady and damp situations, but in its Cowslip form you may search a meadow where it abounds for long in any of the five months between September and March without finding a plant of it in leaf. In its own country *P. japonica* has probably the same habit of maturing and losing its leaves before the end of summer and then resting till spring; but not only *P. japonica* but many other perennials of undoubted hardiness, as the Japan Anemones and the Funkias, are liable to be demoralised by the irregularities of our English summer and its uncertain alternations of hot and cold, wet and dry weather, and they generally have to bow their heads and yield to the frost before properly maturing their growth. This is their fate in my garden in Cheshire every year, but they do not seem to suffer much from it. Those gardeners who can spare the time and the material will find it a good plan to place a shovelful of leaf soil or other light compost over the crowns of such plants before winter. Most of the Primrose family seem to delight to have their crowns covered in winter an inch or two deep. The old leaves of the plants decay gradually under the shelter of the light soil, and the shock of being suddenly cut off by hard frost when they are full of sap is prevented; but this protection is by no means necessary to *P. japonica*.

I may add that *P. cortusoides*, though it ripens seed, never comes up in my garden from self-sown seed, being more capricious about soil and climate than *P. japonica*. Though it survives even severe winters, minute crowns almost destitute

of roots as well as of leaves are the only visible remains of it at the end of winter. A slight raking would entirely exterminate them, and I am obliged to mark them carefully. I used to think the surviving shoots were seedlings, but am now certain they arise from the last year's crowns. They begin to grow in April, and flower about the end of May.

Slugs are fond of *P. japonica*, but seem to neglect *P. cortusoides*. Many quite hardy plants, especially Delphiniums and Pyrethrums, are often thought to have been killed by frost, when the real cause is the slugs, which lodge in the crown and eat off the young growth as fast as it is made in early spring.—**C. W. DOD.**

ON page 10 of your Journal a correspondent doubts the hardiness of *Primula japonica*, and states that by the last frosts many of his plants "have been entirely destroyed and nothing but the centres remain uninjured in the best." I thought the same as your correspondent a year ago, but I found none of the supposed destroyed plants were in reality killed, but shot up and bloomed in the spring and summer as well as any of those under protection. Indeed it seems the nature of the plant to die back in winter, and those protected in frames lose all their leaves in a similar manner. *Primula japonica* has, however, a biennial or triennial character, and old plants are apt to die out. I find two-year-old seedlings are best, and it is most readily propagated from seed. It is one of the plants introduced by Mr. Fortune from Japan, in 1862, I believe. I should like to hear from your correspondents as to the hardiness of some of the other recently introduced Primulas.—**GEORGE DOWKER, Stourmouth House, Kent.**

JUDGING COLLECTIONS OF FRUIT.

THE plan of Mr. Witherspoon, referred to by "EXHIBITOR," of a card being placed on each collection of fruit on which the judges shall mark the number of points to which they consider each dish entitled, will not, I think, have the effect desired of "diminishing grumbling," which I know by experience is not only common but often unreasonable at certain exhibitions. I quite agree with Mr. Witherspoon, it is highly desirable that schedules be explicit, and that the number of fruits that each dish must contain be stated. I agree also that point-judging is the best of all modes of arriving at a just decision, and I think further that the points allowed to each kind of fruit, as stated on page 332, are sufficiently well placed for all practical purposes. It is evident that Mr. Witherspoon has given the subject careful consideration; his object also is undeniably good, and therefore the plan he has submitted merits discussion.

Like "EXHIBITOR" I have been waiting for an expression of opinion on the project in question; indeed it would seem as if everybody had been adopting a waiting policy to "see what others say," rather than submit their own opinions on the point at issue. As an old exhibitor, and by no means a young judge, I must say that I do not think the plan projected will commend itself to judges generally, neither do I think it will "work well" in the estimation of the managers of exhibitions.

As to judging I will speak for myself, and say that I always adopt point-judging when it is necessary—that is, when the relative positions of the collectors are not, as they often are, apparent at a glance; in this case point-judging would be a sheer waste of time, and I am sure there is none to spare at Newcastle. But assuming point-judging necessary it is adopted, and a decision given by adding up the points. If Mr. Witherspoon's project were carried out the decision would obviously remain the same, and I for one object to detail the points for disappointed exhibitors to wrangle over. Instead of the plan diminishing grumbling, it appears to me that in a collection of eight dishes it would increase it by just eight times, for the points given to every individual dish would have to be discussed, objected to, and defended according to the particular notions of the several critics, each in his own opinion being as competent to adjudicate, especially if he is a young and enthusiastic exhibitor, as judges who have had ten times the experience. Further, I should refuse to detail the points as proposed, because I object to being pestered with letters asking for reasons why I did so and so. I have had several such letters, not one of which I have replied to it is true, but I object to receive more; and as sure as I credited Grapes with say eight points, I should be requested to state how I found them, how much importance I attached to colour, bloom, and

general finish, how much to size and regularity of berries, size of bunch, &c.; and so on throughout the class.

I will now briefly consider the question in reference to the exhibition. First, if the proposed plan is adopted it must be acted on throughout the show. If it is right for a few classes it is equally right for all, and it cannot consistently and with justice be withheld from any. This being so, and I assume that exceptions in a case of this kind are indefensible, then the number of judges must be increased quite threefold, and that I think is not generally practicable, especially when the results would be at the least of a questionable character. Again, the managers of not a few shows find it necessary to adopt means to prevent obstruction, for it is a fact that cannot be disputed, that the clustering of critics for an unreasonable length of time around certain exhibits is a great inconvenience, and which would be increased rather than diminished if the plan propounded were carried out.—A JUDGE.

THE NEW ROSES OF 1879-80.

THE "Journal des Roses" for November and December last year contained a long list of new French-raised Roses, the aggregate number amounting to seventy-six varieties. To this number twenty-two different raisers have contributed—viz., M. Lacharme, two; J. B. Guillot, fils, two; Madame Veuve Ducher, three; Antoine Levet, four; Pernet, fils aîné, two; Joseph Schwartz, four; Rambaux et Dubreuil, three; J. M. Gonod, two; Leveque, five; Moreau-Robert, four; Jacques Vigneron, three; F. Brassac, one; Soupert et Notting, three; Nabonnand, thirteen; Liabaud, two; Eugène Verdier, eight; Margottin, père, two; Fontaine, three; Oger, three; Dugat, one; Boytard, one; and Duval, five. To these must be added the fifteen English-raised varieties announced in the "Gardeners' Year Book" for 1880. Ten of them are being sent out by Mr. H. Bennett of Stapleford, the remaining five being raised respectively by Messrs. G. Paul, two; Perkins, one; Ward, one; and Turner, one. Thus the total number of new Roses from all sources for 1880 must be set down as ninety-one.

English rosarians, more especially those whose aim is to purchase the new varieties at high prices and to test them by high culture with the already existing varieties, have long learnt that "it is not all gold that glitters," and year after year have grown the new imported Roses to find very few superior to those already in cultivation. The majority after flowering are condemned and forgotten, sometimes no doubt rather too hastily, because, owing to the rapidity with which they have to be increased to meet the demand, the plants are naturally very weak when first sent out in this country by our nurserymen.

Until recent years we were mainly dependant on our neighbours across the Channel for all our Roses, and were bound to accept what they sent. Now, the raising of new varieties is fast increasing in this country, and in most cases the raisers retain the whole stock until the Rose-loving public have had opportunities of seeing the productions and judging of their qualities. Mr. Bennett's new Hybrid Teas have, however, been sold and increased by thousands, although few rosarians have had the privilege to judge of their superior qualities. All British rosarians are looking forward with more than usual anxiety for the blooming of these pedigree Roses. If we are to judge of their merits from their parents we expect some decided acquisitions. It is certainly a step in the right direction to be able to furnish the names of both parents, which if persevered in will in time lead to a pedigree; for the present they cannot rightly be termed "pedigree," as the names of only the first parents are given. Ten new Hybrid Teas sent out by one firm as the produce of one year's raising exhibits great enterprise, and excels all other raisers with the exception of M. Nabonnand, who, singular to say, appears to have adopted similar means to Mr. Bennett in raising Hybrid Teas.

Rose Madame Oswald de Kerchove, raised by Schwartz and figured in the "Journal des Roses" for December, appears to be a Rose of great promise. It is said to be a Hybrid Perpetual, but as the pollen of Madame Falcot was used on a Hybrid Perpetual I cannot help thinking it partakes of both. Its wood and foliage bear a strong resemblance to the Hybrid Perpetuals, while the flowers are white with a coppery yellow ground, changing in the centre to a coppery rose. The flowers are said not to be large, but very profusely produced and a very desirable colour. There are many others from the description given that bid fair to become favourites among us. I trust they may, and the time cannot be far distant when the

new race of Hybrid Teas, of which Cheshunt Hybrid may be named as the type, will claim to be classed by themselves; and the National Rose Society will do well to provide a place for them in their schedule of prizes, and further to allot their respective divisions.—J. W. MOORMAN.

PRECOCITY IN VEGETABLES AND PLANTS AS INFLUENCED BY THE MATURITY OF THE SEED.

UNDER the above heading on page 11 Mr. Laxton, Bedford, makes a number of remarks which must have taken many of your readers by surprise, as almost every one of his conclusions are diametrically opposed to what have hitherto been observed. Anyone who refers to the *Gardener's Chronicle* of December 20th, 1879, page 786, will see how the people of Norway and other northern countries act in regard to this matter. Practice has proved that northern seeds from late localities always produce plants with a marked precocity over seeds from the earlier warmer region of the south. Not long ago we read of a continental professor of botany who made experiments with a variety of plants, even including such weeds as Chickweed and Groundsel; and the results were that seeds from cold late localities were invariably earlier in germinating, and the plants earlier in becoming mature, than were those raised from seeds of the same varieties and species from southern and early localities. At page 34 of Mr. Burbidge's excellent work, entitled "The Propagation and Improvement of Cultivated Plants," we find tables copied from a paper published by Dr. Gustav Marck, which are the results of experiments made by him at Halle and Leipsic, which prove that well-matured seeds tend to produce strong vigorous plants, while those badly ripened produce plants characterised by weakness and precocity.

Having taken special interest in this particular phase of vegetable life in its bearings upon gardening I have given much attention to it, and until Mr. Laxton's paper appeared I had not heard of anyone who held a different opinion from what is indicated by the paper referred to above. Some of his statements will not bear examination, and I may remark that last spring (April 12th) I sowed a row of Peas (Veitch's Perfection) 50 feet long, partly with well-ripened seed saved from fine vigorous pods the year before, which were ripe in September, and partly with very badly ripened Peas from the same row gathered a month later. The result was that we had two or three gatherings from that part of the row which was sown with inferior Peas, while the plants from the best seed did not mature a single pod. This experiment was made to prove or disprove Loudon's theory that badly ripened seed favoured precocity.

I have twice tried the same experiment with Leeks, and the results were similar. It is well known by exhibitors that when Leek seed is sown in heat about the 1st of February, and the plants grown on in pots and finally planted out in May, there is danger of their running to seed by September if they be checked by any means. To see what difference there might be between the progeny of well-matured and badly matured seed, I selected in 1877 six of the finest Leeks in the garden, planted three in good soil in a sheltered spot with a southern aspect, and the other three in pots which were placed in a vinery. This was in January. Those in the vinery "shot" for seed by March, and were planted out beside the other in May; those which were outside from the first did not "run up" till June, and as the year proved wet the seed ripened very slowly. The other seed was ripe about the middle of August and was extremely plump. A portion of each were sown early in February, 1878, and treated precisely the same. By August one-third of the plants raised from the badly ripened seed had shown seed stems, and the remaining two-thirds all "shot" save one that same autumn. Three only of the plants raised from the good seed ran to seed that autumn, while the remainder did not run till next May (1879). The difference in size and quality was all in favour of the plants raised from the good seed, for in August they were fully twice the size of the other, but the other showed the greatest precocity. I repeated the experiments the years following (1878-79) with precisely similar results, and henceforth I shall raise our Leek seed by starting the plants early, so that they may produce early-matured seed in order to counteract that troublesome precocity which is often so inconvenient.

Again, Mr. Laxton says that "it is also well known that the repeated forcing of the same individual plants of Seakale and Rhubarb . . . induces precocity the next season."

This is true of plants which are, by reason of early forcing, early matured; but every practical gardener knows that the forcing of Seakale, Rhubarb, and Asparagus is inimical to an early maturation of the growth in autumn.

My object in endeavouring to confute Mr. Laxton's statement is to bring before your readers a few observations on this very interesting subject to counteract as far as possible the evil effects of using partially matured seeds. This is a question on which depends the success or failure of many of our crops in the year on which we have just entered. Ordinary treatment will not secure ordinary results this year, for most of the seeds of 1879 are in an abnormal condition, and unless we alter our modes of working to suit the altered conditions we need only expect failure. Partially ripened seeds are seeds with a weak vitality; and when vitality is weakened in any plant, whether because of weakly seed, poor soil, damage to the roots as in root-pruning, employment of weakening stocks or other means, the result is the same—precocity.

In order to give weakly seeds a chance we must take care that we sow our seeds only under favourable conditions. We may sow plump healthy seed while the soil is yet cold and not very dry, and yet obtain a crop; but the seeds which we receive this year must not be treated thus. It is not always good to sow the first opportunity we have of dry soil while yet the sun is low in the horizon; and seed sown too soon frequently produces later crops than seed sown when the soil is in a state to favour a rapid germination. Seed, however good, if sown in cold soil germinates slowly and weakly compared with seed sown when the ground has become dry and warmer.

To assist the plants produced by weakly seed we must afford them plenty of nutriment on the very surface. Where the soil is rich this will occasion no trouble, but on poor or newly broken land care should be taken to have a rich surface so that the young plants may grow vigorously from the first. This is an important matter in any year, and ignoring it ruins many a crop in its infancy, but it is doubly important this year. For this purpose dressings of well-decayed manure should be forked into the surface of the soil when possible. Slight dressings of guano will prove very helpful, and soot is by no means to be despised. Drenchings of urine a few weeks before the seed is sown will prove of the greatest service, more especially for Leeks and Onions. Soot and wood ashes make a first-rate surface dressing for the latter when hoed into the soil, and when liberally applied it is a good preventive of the grub. As many as possible of the earliest batches of the Cabbage kind—such as Cauliflowers, Brussels Sprouts, &c., should be sown under cold frames, and the best of the seedlings afterwards pricked out into rich soil. The only Brussels Sprouts worth the name in this district were raised there. It saves a month or even six weeks, and in late districts in such untoward seasons as the last it often makes all the difference between success and failure. Whatever seeds are sown under cold frames must be near the glass, and the ventilation should be good. Very early Peas should be sown on turves under frames unless the situation be very favourable and the soil dry. When very wet and cold they may rot outright.—SINGLE-HANDED.

STOCKS FOR ROSES.

F. G. OLIVER, on page 28, complains of the difficulty of deciding as to which are the best stocks to grow Roses on, seeing such authorities as the Rev. Canon Hole and R. N. G. Baker, Esq., differ so remarkably. My experience is as follows:

Some Roses prefer the Manetti, such as Abel Carrière, Paul Neyron, Paul Verdier, Fisher Holmes, and other strong-growing varieties; but as a general rule the smoothwooded varieties such as Eugène Verdier, Comtesse d'Oxford, &c., whether strong growers or not, prefer the Briar. My opinion is, that were any grower to grow all his Roses on one stock he would fail, for Clemence Raoux, Henri Ledechaux, Princess Beatrice, and others, which are sure to have a large amount of their wood die during a sharp frost, if grown on the Briar are more able to stand than on the Manetti.

With respect to the age at which Roses give the best exhibition blooms, much depends on their treatment and the variety. I believe if good plants on the Manetti stock are planted carefully in suitably prepared soil, they are best the second and third years after planting from a nursery. Some varieties, Abel Carrière for instance, grow larger and stronger every season, and consequently give us larger and better blooms. Then, again, there are some that seem as if they will

not thrive, let them be on what stock they may, for more than two or three seasons. There is something very pleasing in blooms cut from maidens—they seem more deeply cupped than those grown on the cut-backs, although I think a well-established plant has more substance and a greater number of petals than a maiden.

We planted a bed of Roses on the seedling Briar, thinking to have them stand well, but we were disappointed. They did very well the first year after removal, but now, three years later, there is not one out of six alive, and these are unhealthy. Roses on the Manetti stock planted at the same time and receiving the same treatment, have grown remarkably well and produce good blooms. Much of this depends upon the soil. A friend of mine a few miles from here says that only the seedling Briar will grow in his garden. I think it a great mistake to use the Briar exclusively, simply because it has been found to suit some naturally bad growers better than the Manetti.

If the seedling Briar is such an excellent stock for all Roses, why do not our Oxford friends make more show in the lists of prizes at the different Rose shows?—A. P.

I AM indebted to "QUILLO," page 21, for so kindly replying to my inquiry. He is quite correct in his surmise, I have never used the Griffierie stock for the Maréchal or any other Rose, but I shall now lose no time in trying it. Some years ago an announcement was made by, I think, Mr. Harrison of Darlington, that a new stock would shortly be offered superior to any extant, and if my memory is correct it was called the Napoleon stock, but I fear it has proved unsuccessful.

Your correspondent Mr. Oliver's question (page 24) will doubtless puzzle the large and increasing class of amateurs, but surely it has long since been decided that the best stock is the one best suited to the soil. Canon Hole is probably quite correct in advocating the seedling Briar for his land; and our champion amateur is doubtless right in recommending the Manetti for such soil as exists at Heavitree, where he resides. The Manetti will not thrive in a strong retentive clay, and the Briar succeeds but sadly on light drifts lands.

I have long urged the superiority of dwarfs over standards, and I think I am correct in stating that Mr. Baker, who grows some thousands of Roses, cuts the magnificent blooms which we see at the shows entirely from dwarfs.—GEORGE DUFFIELD, *Winchmore Hill, N.*

ROYAL HORTICULTURAL SOCIETY.

JANUARY 18TH.

THE first meeting of the year would have been an unusually quiet one had not Messrs. Veitch contributed three large and handsome collections of Cyclamens, Primulas, and Orchids, besides groups of Roman Hyacinths and Lilies of the Valley. Mr. Cannell's Pelargoniums were also very bright, and imparted a very agreeable liveliness to the otherwise rather dull appearance of the tables.

FRUIT COMMITTEE.—Henry Webb, Esq., in the chair. Mr. Goldsmith, gardener to P. C. Hardwicke, Esq., Hollenden, Tonbridge, sent a collection of twelve varieties of Pears to show how they had kept this year. Many of them were quite out of season, Beurré d'Amanlis being now only just ripe, and Beurré Superfin was in its best condition, while several of those which are usually autumn Pears were not yet ripe. Mr. Shirley Hibberd of Stoke Newington sent twelve pans of Watercress remarkably well cultivated. They were of two kinds—the Erfurt Sweet Cress and the ordinary Watercress, of the latter of which there appeared to be two varieties, one of a dwarf habit than the other. A cultural commendation was awarded. Messrs. Barr & Sugden, King Street, Covent Garden, sent a collection of sprouts of Variegated Kale, to which a letter of thanks was accorded.

FLORAL COMMITTEE.—W. B. Kellock, Esq., in the chair. Messrs. James Veitch & Sons, Chelsea, were accorded a vote of thanks, and the award of a silver medal recommended for their large collections of plants. These comprised about forty Cyclamens in very vigorous health, both the foliage, flowers, and colours being excellent; twenty plants of *Primula sinensis* fimbriata alba with very large flowers, and about the same number of *P. fimbriata* rubra, trusses large and colours rich. A collection of Lilies of the Valley was unusually fine, the scapes and bells large and accompanied by good foliage, which greatly improves the appearance of the flowers. An excellent collection of Orchids was also staged, including *Masdevallia Tovarensis*, a well-known pretty white-flowered species from Colombia, with over sixty flowers (first-class certificate); *Saccolabium giganteum*, a good specimen, which was bearing eight large spikes; *Masdevallia polysticta*, flowers with small purple-spotted attenuated sepals;

Chysis Chelonii, a hybrid between *C. bracteosa* and *C. aurea*, with pale orange-coloured sepals and petals; *Dendrobium endocharis*, a hybrid between *D. japonicum* and *D. heterocarpum*, with small whitish flowers, sweetly scented; *Oncidium cheiroporum*, bearing over a dozen racemes of its small yellow flowers. A flowering plant of *Staphylea colchica* was also shown bearing numerous trusses of white flowers. This plant is well adapted for forcing, and yields a profusion of useful flowers. It was first exhibited and certificated in January last year. It was figured in this Journal, vol. xxvi, page 66. Mr. W. Bull obtained a first-class certificate for *Barkeria cyclothilla*, an Orchid from Mexico; the flowers are small, sepals and petals pale pink, label-lens tipped with bright lake. Very pretty and distinct.

Messrs. Osborn & Sons, Fulham, exhibited a handsome specimen of *Heliborus niger majus*. The plant was in a tub, and measured about a yard across, and was bearing over three dozen flowers, some of which were nearly 4 inches in diameter; foliage very dark green and vigorous. Cut flowers of Gilbert's double *Primulas* were also shown extremely good in colour and form. A vote of thanks was accorded. Messrs. Sutton & Sons, Reading, sent a collection of new *Primulas* and *Cyclamens*, several of which were neat in habit, but were not considered sufficiently distinct to merit special award. Mr. Cannell, Swanley, Kent, exhibited a large number of *Pelargonium* blooms in excellent condition as regards colour and form. The most distinct were Mrs. Moore (white with a salmon centre), Louis, Zuleika, Polyphemus, H. Jacoby (very rich dark crimson), Jean d'Arc (good white), Rhenzi (fine scarlet); also three sports of *Vesuvius* (white, salmon, and striped), flowers neat and of good substance. Several pretty species of *Fuchsias* (*F. splendens*, *F. serratifolia*, *F. microphylla*, and *F. thymifolia*), and two varieties of *Primula*—Swanley Red and Swanley Purple, the latter being of an extremely rich crimson tint. For the *Pelargoniums* a vote of thanks was accorded, and a silver medal recommended. Mr. McGrigor, gardener to C. Walker, Esq., Lanark, was accorded a vote of thanks for a fine flower of *Lycaste Skinneri alba*.

In the Society's library Mr. Maries—who has recently returned from Japan, where he was engaged in collecting plants for Messrs. Veitch & Sons—exhibited a large number of curiosities which he had acquired in his travels. These comprise various articles of native manufacture, such as fans, screens, &c., collections of insects, snakes, birds, shells, and geological specimens. In addition a large number of excellent photographs were shown, illustrative of the most picturesque scenery and vegetation.

PORTRAITS OF NEW AND NOTABLE PLANTS.

GLADIOLUS BRACHYANDRUS. *Nat. ord.*, Iridaceae.—“This plant was sent about a couple of years ago to the Edinburgh Botanical Garden from the Shire Highlands by Mr. John Buchanan, along with another less showy species, which also proves to be new. It comes nearest the *Natal G. Ecklonii*, and the old well-known *G. blandus*, but is readily marked at a glance from all its neighbours by its short stamens and very unequal perianth-segments.”—(*Bot. Mag.*, t. 6463.)

SCUTELLARIA PURPURASCENS. *Nat. ord.*, Labiatae.—“This appears to be one of the many varieties of a common South American *Scutellaria*, of which the published type is Swartz's *S. purpurascens*, and which has been described under various names from various parts of that continent, according to its pubescence, length of petiole, &c.”—(*Ibid.*, t. 6464.)

LUZUBLAGA RADICANS. *Nat. ord.*, Smilacaceae.—“A very elegant greenhouse plant, a native of a considerable extent of the coast of Chili, from the latitude of Valdivia to the Straits of Magellan, and also of the plains of Chiloe. It is usually found in forests, rooting up the mossy trunks of trees. Its roots are used as a substitute for sarsaparilla in its native country, on which account, probably, the authors of the genus named it after a celebrated Spanish physician, Don Ignacio Marie Ruiz de Luzuriaga. According to the collector Bridges its stems are used for rope-making.”—(*Ibid.*, t. 6465.)

SYMPHYTUM PEREGRINUM. *Nat. ord.*, Boraginaceae.—“The history of this plant, which is now well known under the erroneous name of *Symphytum asperum* (or Prickly Comfrey) is still obscure. That it is not the true *S. asperum* of Donn figured by Sims is obvious from a comparison of that plate, in which the calyx is correctly represented as short, and shortly five-cleft to the middle only, with obtuse lobes, and which has curved prickles on the stem, arising from conspicuous white tubercles. It agrees well with the character of *S. peregrinum* given in Ledebour, except that the appendages between the stamens are rather shorter (than longer) than the anthers, and the style is not always bent below the top, though it is sometimes so above the middle. From *S. caucasicum* it differs in the stem not being hirsute, nor the leaves softly hoary, and in the calyx being deeply divided. The specimen flowered in

the Royal Gardens from plants of ‘Prickly Comfrey’ presented by Mr. T. Christy, who has been the means of widely diffusing the culture of this *Symphytum* as a fodder plant, under the above name.”—(*Ibid.*, t. 6466.)

APHELANDRA PUMILA. *Nat. ord.*, Acanthaceae.—“Very dissimilar in habit and stature to any of the numerous species of this beautiful genus that have hitherto been imported into this country. Of these no less than fifty species are known, of which only about a dozen have been in cultivation. A. pumila belongs to the section with large bracts, the upper lip erect, concave, and entire, and the lower divided into three large lobes. It was imported by Mr. Bull from Brazil, and flowered in the Royal Gardens, to which he presented it, during last summer.”—(*Ibid.*, t. 6467.)

BÆA HYGROMETRICA. *Nat. ord.*, Gesneraceae.—“The genus *Bæa* is an Asiatic one, and its head quarters are the hilly country of Eastern Bengal, Tenasserim, and Birma, from whence there are seven or eight species, several of them undescribed. One is found as far east as the Philippine Islands, and another in North Australia, whilst the *B. hygrometrica* occurs a long way to the north of the ordinary range of the genus—namely, in the neighbourhood of Pekin. *Bæa hygrometrica* was discovered by the now venerable Dr. Bunge of Dorpat in the mountains near Pekin in 1831, and the specimens here figured were raised from seeds sent to Kew in 1876 from the same locality by Dr. Bushell, physician to the British Embassy at Pekin. They flowered in August of the present year.”—(*Ibid.*, t. 6468.)

ORIGIN OF THE FLORENCE COURT OR IRISH YEW.

HAVING read the query and answer on this point in last week's *Journal of Horticulture*, and possessing very exact and reliable information, signed as it is by the highest possible authority, I feel it a duty to place this on record. A photograph presented to me is accompanied by the information that the tree is the mother plant of the Florence Court or Irish Yew, being one of two trees found by Mr. Willis (a tenant of the grandfather of the present Earl of Enniskillen), in the mountain above Florence Court, more than a century ago. The other tree, since dead, he planted in his own garden. This tree is the progenitor of the innumerable Irish Yews now all over the world. It is, without doubt, a seedling variety of the common Yew, although it has been described as a species, and weight has been given to the different arrangement of the leaves, being scattered instead of in two rows. This needs with ample explanation, as an accommodation to the newly acquired upright or fastigate habit.—R. IRWIN LYON, Curator, Botanic Gardens, Cambridge.

NOTES AND GLEANINGS.

In Messrs. Henderson's nursery at Pine-Apple Place a large batch of *ODONTOGLOSSUMS* are in remarkably healthy condition, and they will shortly produce a very fine display of flowers. A temperature of about 45° is usually maintained, but during the recent severe weather it fell as low as 36° without injuring the plants in the slightest degree. Quite nine-tenths of the plants are showing spikes of flowers, and the foliage and growths are as vigorous as could be desired. The effect of maintaining a moderate temperature in the *Odontoglossum* house is, that the flowers are sufficiently retarded to give them the benefit of the increasing light and clearer atmosphere of the early months of the year.

SINCE the formation of the RICHMOND HORTICULTURAL SOCIETY five years ago few organisations of the same nature have attained to such a sound and well established position. Various circumstances have contributed to this result. The district is populous and wealthy; the site of the summer Shows (the Old Deer Park) is picturesque and admirably adapted for the purpose; the patronage is distinguished, and the management efficient. During the year 1879 two exhibitions were held—the usual summer Show, and an autumn Show of *Chrysanthemums*. Both proved highly successful, and the total income for the year is recorded as £630 12s. 11d. After paying all expenses the Committee find they have the remarkably handsome balance of £126 4s. 11d., as compared with £57 1s. 2d. in 1878. The Exhibition of *Chrysanthemums* gave so much satisfaction that the Society might repeat the experiment with considerable advantage.

As in the previous year, numerous medals were awarded to the exhibitors in addition to the ordinary prizes, which were sufficiently liberal to produce good competition. The Duke and Duchess of Teck continue to take great interest in the welfare of the Society, which now includes among its patrons H.R.H. the Duke of Cambridge. Mr. Chancellor, the enterprising Secretary, and the Committee are thus encouraged to advance the work in which they are so worthily engaged of improving the horticulture of a very large and important district.

— AT a General Meeting of the Royal Horticultural Society held on Tuesday last, Dr. Denny in the chair, the following candidates were elected Fellows—viz., Mrs. Barrand, William Henry Belfield, Mrs. Chernside, A. Clapham, Rev. H. Harpur Crewe, Sydney Ebbs, Miss Frances A. M. Eland, Mrs. Gosses, Mrs. Houldsworth, Stephen Kennard, Mrs. Radley, Sir Henry Scudamore Stanhope Bart., Frank Taylor, and Preston J. Wallis.

— CONCERNING the condition of the TREES in KILNISTON GARDENS, Mr. G. Parkin, forester, Wortley, writes as follows in the December number of the "Journal of Forestry":—"A short time since I was very much struck by the dead and shattered appearance of a great number of trees standing near the small lake immediately in front of the palace. The Elm appears to have suffered most, and some of the Oaks and Spanish Chestnuts. At first sight it appeared very much as if fireworks had been let off near to them, and injured the tops of the trees by the sulphuric or some other acid emanating therefrom. As the ground is in a very wet state on that side of the lake, it is possible that the leakage may have something to do with the destruction of the trees. I am certain of this, that a number of the trees in that locality are dead, and many are dying for want of earlier thinning. Some of them are almost denuded of their tops for want of space and air."

— AN extremely pretty little plant for the stove is HOYA PAXTONI, a Javan species, which is only too rarely seen in cultivation. It resembles in habit that general favourite Hoya bella, but the stems are rather more slender and the leaves less fleshy. The umbels are small but very freely produced, the flowers being pure white with a reddish pink centre. The plant succeeds under the same treatment as that afforded to H. bella.

— AT Roskoff, in Brittany, in a garden belonging to the Postmaster, but which formerly belonged to a monastery of Capuchins, is a Fig tree one hundred years old; the head of which, for it is a standard, measures 500 feet. The branches are intertwined, and rest upon four walls and on oak beams laid over sixty stone pillars 6 feet high. In September, 1868, the crop filled twelve hogheads.

— IN a very correct volume entitled "The People of Turkey," written by the daughter and wife of a consul, this DESCRIPTION is given of a ROSE HARVEST. A large garden was thickly planted with Rose bushes, which were then laden with half-opened buds; the nightingales in flights hovered over them, although the young Bulgarians were gathering the flowers. Girls were cheerfully employed in stripping off the buds, throwing them into baskets which they carried. Young men helped, and children ran to and fro emptying the baskets into larger receptacles presided over by the matrons, who, seated beneath the shade of trees, sorted the Roses. From these, we presume, Rose water and the attar of Roses is obtained.

— IN a recently received report from Guayaquil, it seems that the bad season of 1878 had a most serious effect upon the produce of the soil in that country. The COCOA CROP (Theobroma Cacao) was the smallest on record, though the high prices obtained for this article in the European markets have in some degree compensated for the loss. The Coffee crops gave even a worse result, as during the last months of the year it was found necessary to import Coffee from Central America for home consumption. The quality of the Coffee produced in Guayaquil during the year was very inferior. The Rice plantations having been almost entirely under water, owing to the heavy rains, for a long period during 1877 and 1878 the production of this article of food (of which, in the coast provinces of the Republic alone 5000 quintals per month are consumed) was very limited. The Cotton plantations were also destroyed by the same cause. The failure of the above-mentioned crops left a large number of men free to attend to the collection of indiarubber and Ivory nuts. The export of the former during 1878 was a little below that of the preceding year, owing doubtless to the scarcity of the trees pro-

ducing it, and the difficulties of bringing it down to the coast from the inland forests where it is gathered, each year made more distant from the ports of embarkation owing to the continued wanton destruction of the trees. The quantity of Ivory nuts gathered and exported by far surpassed all previous years.—(Nature.)

— OUR correspondent "R. P. B.," sends us the following NOTE ON VINES—"KITCHEN GARDENER's" remarks (see page 2), on the winter management of late Vines are very much to the point. I do not find that it does Vines any harm if kept at a minimum temperature of 50° throughout winter. The simplest and perhaps the most effective mode of cleansing Vines is to wash them with very hot water and soap. Mr. Bardsley is also on the right tack in starting late Vines early. This is especially necessary with regard to Muscat of Alexandria. Ours are started in February.

— THE same cultivator also observes that the earliest SOWING of TOMATOES should now be made for raising plants to be grown in pots. Green Gage is the earliest variety. Last year owing to the extreme cold the seedlings did not start well. Some cuttings of Excelsior were struck about the end of January, and these though rather later than usual did very well indeed.

— MR. W. ROBINSON, foreman in the gardens of Baron Schroeder, The Dell, Staines, has been appointed gardener to L. D. Hall, Esq., Farnham Chase, Slough; Mr. J. POLLETT succeeds Mr. Gibbs as gardener to A. M. Wilson, Esq., Stowlangtoft Hall, Bury St. Edmunds; and Mr. G. R. HATCHEE, late foreman at Grimston Park, Tadcaster, has been appointed head gardener to John Fielden, Esq., at Dobroyd Castle, Todmorden, Lancashire.

— PACKING ROSES FOR NEW ZEALAND.—I am about to return to New Zealand, and wish to take a few new Roses. Can any of your numerous correspondents tell how best to pack them, and in what stage of growth, &c.? I shall be very glad to have information on this subject, as I am very anxious to do my little towards stocking my adopted country with the best and newest of Roses.—TOM M. BROOKS.

CHRYSANTHEMUMS.

It is well known that anyone can grow Chrysanthemums such as are often seen tied up like a bundle of sticks with the stems half denuded of their foliage, but to grow them to perfection demands skill, attention, and perseverance. From the time the cuttings are taken till the plants are in flower they should receive no check whatever, but be kept growing as fast as possible. To effect this the following rules must be strictly attended to. The cuttings strike freely in a cold frame kept close for a few days, but when the plants commence growing an abundance of air must be admitted on all favourable occasions. The plants must be potted as soon as they become large enough, employing a soil composed of two parts good loam, one part well-decomposed manure, and sufficient sand to keep the soil porous. The pots must be well drained, for although the plants require abundance of water, yet anything approaching to stagnation at the roots is very injurious. From April till June the points should be pinched out of the longest shoots to induce the production of sufficient shoots to suit the required shape of training that is intended to be pursued. About the end of June the final potting should be performed, potting them firmer than on previous occasions. It is a good plan to plunge the plants half way up the pots in rows, allowing sufficient room for a man to pass between them; by so doing a uniform temperature will be preserved at the roots and the growth will be matured.

Plants trained in the erect form should be supported by stakes, one to each shoot. The training must be systematically done, and the shoots of no plant should be allowed to shade those of its neighbour. Unless the wood is perfectly matured it is useless to expect fine flowers. The plants should never be allowed to suffer by want of water, and they will be benefited by a damping overhead twice on fine days. The Chrysanthemum being of strong growth it may advantageously be supplied with stimulants three times a week from June till the buds commence to unfold, when liquid manure should be withheld. If large blooms are desired one flower only should be left on each stem. As soon as the buds appear disbudding should be commenced, retaining the one that appears in the centre, thus concentrating the strength of the plants in the retained buds. The plants must be taken under cover on the approach

of frost, a light well-ventilated greenhouse being the best place to bloom them in.—JAMES SKYRME.

IPOMÆA HORSFALLIÆ.

THIS is unquestionably one of the best winter-flowering plants grown. On a plant here, which occupies a space of 5 square feet, I counted upwards of 360 flowers in different

stages of development. The plant is growing in an 8-inch pot, and the growths trained to wires near the glass.

This species is often seen with growths from 10 to 20 feet in length, terminating with a solitary umbel of flowers; but on the other hand, by restricting its rooting space and frequent pinching during the season of growth, the flowers and foliage can be confined to any size the grower wishes.

In case there are any readers not acquainted with the plant



Fig. 7.—IPOMÆA HORSFALLIÆ.

I may mention that, being of East Indian origin, it requires a stove temperature. The flowers are of a rich metallic crimson colour, and although they do not last more than twenty-four hours, there is an abundant succession every morning.

After the flowering season is over gradually dry the plant off, and when the leaves are fallen cut the growths back, taking into consideration the space that the plant is intended to fill the following season. If it has already occupied its allotted

space cut hard back to one or two eyes the same as with Vines but be careful to sufficiently dry off the plant before pruning, otherwise bleeding might take place to such an extent as to seriously weaken the plant for the following season. When the season of growth comes round soak the ball in a tub of tepid water. If extension is wanted give the plant a shift into a pot of larger size; if not, reduce the ball about an inch, and fill up with fresh compost consisting of two parts fibrous loam,

one of peat, and the other part a mixture of sand, dried cow manure, and charcoal broken small. At first, water must be sparingly applied; however, when growth is vigorous copious supplies are necessary, as well as liquid manure. Stopping may be practised to any extent until September according to the space the plant is to occupy. Especial attention should be paid to watering during the flowering season, for if the plant is allowed to flag, or even to become unusually dry, the fall of a number of buds is the result. This climber may either be trained to a back wall or up wires or strings against the glass. In the latter position it is seen to greater advantage. I strongly recommend anyone possessing a stove to give this climber a place, and they will be rewarded with abundant flowers at a season when flowers of any kind, but especially of this colour, are both scarce and in great demand.—A. W., *Lincoln*.

GOOD PEARS.

VALUABLE information having been elicited relative to the earliest section of Pears, of which Williams' Bon Chrétien was

figured as a type, we have submitted examples of Pears that ripen somewhat later, and which for the purpose of reference may be termed September Pears, this being the usual period of ripening during ordinary seasons in the south of England; but in cold seasons and districts they are necessarily later in arriving at maturity. The varieties figured—*Beurré d'Amanlis*, *Flemish Beauty*, *Fondante de Cuerné*, and *Fondante d'Automne*, were not selected because they are the best of their season, but because they are good representatives of early autumn Pears. Of these varieties, and others ripening at or about the same time, we shall be glad to have information from those who can send it relative to suitable modes of culture, and under what conditions the varieties succeed or fail. We desire that attention be limited to varieties that ripen before such well-known Pears as *Beurré Superfin*, *Louise Bonne of Jersey*, *Marie Louise*, and others that belong to the large and important section of late autumn Pears.

The variety now figured, *Fondante d'Automne*, is handsome in appearance, and when in good condition is delicious in quality. It is a good grower and bearer, and in not a few

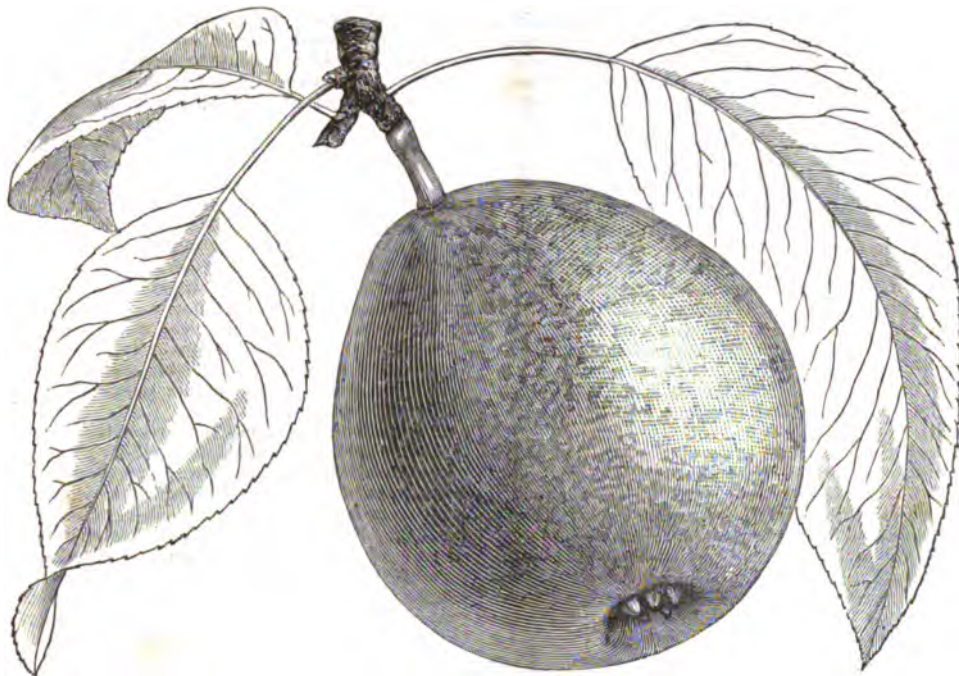


Fig. 8.—FONDANTE D'AUTOMNE.

gardens is considered the best Pear of its season, which often extends into October, and during a late year like the present may even keep until November.

THE FROST AND DECIDUOUS TREES.

I AM sorry to say that what Mr. W. Paul states in the last week's Journal about Rose trees still retaining their leaves at Waltham Cross is true also of this part of Yorkshire. Not only are Rose trees now carrying their foliage, but some Oaks and Elms are still in full leaf, even after having undergone 26° of frost. The reason of this is undoubtedly the unripeness of the wood, for which the ungenial and sunless summer is answerable. There is no more certain sign of the want of maturity in the wood of deciduous trees than in their inability to shed their leaves; and I venture to predict that both the Editors and Mr. Paul are at fault in supposing that the leaves have afforded any material protection to the trees, certainly none to the branches on which they are hung, which being unripe are pretty sure to have had the pith frozen, however green they may look on the outside.

I do not wish to set up my opinion against that of such an eminent rosarian as Mr. William Paul, but judging from his letter it seems not to have occurred to him that the leaves still clinging to the branches were signs of immaturity in the wood.

My reasons for believing that the leaves have not afforded much protection to the trees are these. In dwarfs the snow is the best protection and will protect the wood covered by it, while as the frost is the most severe just at the snow line, the shoots will be frozen through there, and consequently the tops frozen or unfrozen must die down to that place. In standards a frost such as we have had must have frozen them at the union with the stock in most cases, so it is of little consequence whether the younger shoots are frozen or not. The wood which resists the most frost is the youngest if it be ripe, and in many cases it happens that this wood is unfrozen while the older wood below is killed.

It is, as the Editor states, impossible to tell the effects of the frost at present, but seeing that the trees were unable to ripen their wood it is much to be feared that the destruction of Rose trees will have been immense, and those which have escaped severe injury will yet be very late, and we must not expect any early blooms. Secretaries of Rose shows should bear this in mind in fixing their shows.—F. BOYES.

THERE is a Nectarine tree here which has been quite covered with fresh green leaves until the present time. It is on the open wall on an east aspect, and affords another instance of the kind recorded by your valuable Clonmel correspondent and Mr. Luckhurst at page 7. All the Peach, Nectarine, and

Plum trees on the same wall shed their leaves in November, but the one in question still retains them, notwithstanding many weeks of sharp frost. I am inclined to account for it in this way.

During the early part of October this tree was root-pruned, and the trench filled up with a better compost than that which had been there before. The mild weather which followed no doubt caused new roots to penetrate the fresh soil, thus infusing new vigour into the tree. So long as this lasted the frost had little influence over the firmly attached green leaves. What the consequence may be to the tree next summer will tell, but at present it appears very healthy.

Were the trees of your correspondent root-pruned or top-dressed last autumn? or did they not grow freely until the mild weather came which we had before the winter set in? Others of our Peach and Nectarine trees were treated in the same way, but their wood was more matured and growth was not so readily quickened, and now they are in similar condition to what they were at this time in previous years.—J. MUIR.

THE WOODS HOLDING HIGH FESTIVAL.

HOWEVER enjoyable "gardening" may be, and is, to the great majority of your readers, and however welcome gardening literature is to them, yet a change both of occupation and of recreation is generally acceptable. A change therefore I submit—one that I trust is congenial to all, and appropriate to a journal that is, I know, widely read by the nobility and landed gentry of the kingdom. Not only will this important class of readers peruse these notes, but gardeners I think will not pass them over, for if I mistake not many of them have, years ago it may be, shared in such a day as I shall describe, and its various incidents will consequently be quite familiar to them.

It is a genial day in winter, far far away from the fogs of London; the sun rises late and low, it may be, but clear and bright. Early, very early, there is an unusual stir in the quiet hamlet, or rather let us say parish, for the beauty of the place is that there is no spot here which contains more than three or four houses in a cluster. And the visitors in summer who visit the church of the parish all ask the same question on looking round the lovely scene, "But where do the people live? we see no houses."

It is no good visiting the school to-day, for we shall only find a few little infants and small girls with very red noses and hands. The boys are all away, but where? See here while we stay outside the school a small procession comes. First a man in a velvet shooting coat and a bag of cartridges slung round his neck, and a large hazel stick in his hands, stalks heavily down the hill; at his heels come all the school boys who can walk and use a stick. These are the "stops" which the under gamekeeper is going to place in position. Each one too carries a stick, which it will be his duty to hit against a tree at the end of the covers or rides, so as to stop the pheasants running away. Long before the sportsmen arrive these little mites are in position. Every minute their noses get redder and their hands bluer, and their mouths water all the more for the luncheon which they know will come in due time, but what a time to wait! Not till one or two o'clock will the welcome keeper appear bearing the bread and cheese, and "oh! dear, if he should forget!"

You wander through the fields, but to your surprise you find "nobody working there." You look in vain to see with joy the impatient husbandman sowing the seed. Everyone appears to be keeping holiday—farmers, labourers, and children. Soon you come upon a great mixed multitude. Here, Mr. Parson, are all your men; you have not seen so many together for a long long time, never indeed on a Sunday. All are dressed in the roughest clothes that can be imagined. Falstaff's ragged army could not have excelled them in tatters. The very hats are more suitable for scarecrows, and the legs are to a man encased in hedger's leggings. These are indeed the "beaters," and they know, they have reason to know, what rough work is before them, and so they dress accordingly. But all the tenants are now here waiting and discussing local topics.

Soon the still quiet is disturbed by a most musical sound that faintly recalls one's military days; louder and louder sounds the post horn, and with a grand flourish the four-horse dray pulls up at the corner, and the shooting party descends. Everyone is now in good temper whatever hard words may pass before the day is over—nothing but pleasant greetings are heard now. "Fine day," says my lord, as he takes his

breechloader from the keeper and looks to his cartridges. "Much game here?" says the principal guest. "Pretty well for such a wild country, sir," is the reply, and with scarcely five minutes' delay they start across the fields for the nearest cover. Before they reach it bang bang goes a gun, and a jay which has risen from one of the immense double hedgerows is the first to show that the day of slaughter has arrived. The sportsman carefully pulls out those few feathers which are so useful for making "flies" for fishing, and hands over the bird to the nearest beater; and now we begin operations.

The beaters enter the cover and form in line; two guns, or more if the party consists of five, go inside and one outside each side of the cover. Slowly and silently we go forward. Not a sound is heard save the dull thud of the beater's stick, when a scream comes from one youngster—"Rabbit coming down!" "Hold your tongue, you fool," says the eldest son; "can't you see a rabbit without howling like that?" He, however, knows that each stop and each beater will have a rabbit if enough are killed, hence his excitement. I say quietly, "Don't be hard on him, he is one of my choir boys." "Then," is the reply, "teach him to reserve his voice for Sunday." We go on, when whirr goes the hurried rise of a cock pheasant. "Give it time; let it rise," sings out my lord, and down it comes just as the bird is making sure he's out of danger. "Well shot, very well shot indeed," sings out the master of the ceremonies. Now we are coming to a really marshy place, and every eye is keenly on the look-out, every hand ready, for they know what to expect. A frenzied shout now from three throats, "Woodcock! woodcock!" and four or five barrels are fired in vain, as with the speed of lightning the cock flies away—when, just as it is getting away, a gun from the outside tolls the knell of the bird, which is so much prized by epicures. Ah! what is that so quietly stealing away? Not a sound does that brown long-legged hare make as it quietly tries to gain the open. But the lynx eye of some beater discovers it and sings out, "Hare going down!" and "down" it certainly goes from the sportsman's gun. On we go, and now we are drawing near the end of the beat, and the work gets more exciting. There is a momentary pause, while a gun or two quietly slip to the end of the cover to be ready for the birds as they break out. Then comes the sport. Every minute pheasants rise and fall, and the wood is cleared.

The sportsmen next gather together to count the game. Out of the wonderfully capacious pockets of the keepers come pheasant after pheasant, hares and bunnies, till you stare amazed, as if you were looking at a conjuror bringing out glass vases from a dress coat pocket! The pheasants are laid together. First the cocks (this is never a case of *place aux dames*), then their wives, then the hares and rabbits, and proudly and slowly—as if well aware of its value—the fortunate sportsman produces the woodcock which has fallen to his gun. Then watches are brought out, and a little consultation takes place. "Well, yes," you hear the lord and master say, "you may as well have luncheon now. It is nearly half-past one, and this is a good place; so, keeper, get out the lunch."

Ah, what a meal is that! Whilst the keepers are opening the hampers and getting all things ready, the grooms spread ulsters and rugs on the ground for their masters to sit on, and the sportsmen clean out their guns, and have a look to their supply of cartridges. Then all impedimenta are laid on the grass, the luncheon is ready, and we sit down. But before we begin to eat let us have a glance round the scene. Surely it would be difficult to see any more picturesque one than this.

In a green ride, which even at this season retains some of its summer freshness, backed by a thick double hedge and bank lined with Hollies covered with scarlet berries, the party are assembled. In front there is a gentle declivity which is knee-deep in nut-brown bracken. At the bottom is a purling murmuring brook which sings in the most charming manner a tune that even Wagner could not imitate. There is no wind to disturb the cadence which only varies the least shade as some twig or leaves molest the even tenor of its way. Here and there in the soft banks may be seen the remains of the glorious Ferns, the *Osmunda regalis*, black *Spleenwort*, and other rare ones which abound in this neighbourhood; and—yes! in the sheltered corner is a *Hartstongue*. To the left are the men—some sitting on the mossy bank, entirely regardless of the damp and the chance of rheumatism, while the head keeper hands out to the hungry men huge (we can scarcely call them sandwiches) pieces of bread and meat, whilst every eye, though, is fixed on the under keeper, who

is trying to extract with his teeth the cork from a huge jar ("Brown George," we used to call them at Oxford) of beer.

On the extreme right is the game laid out—those magnificent birds, the cock pheasants, supplying with their splendid plumage the one bit of bright colour the picture requires to make it perfect. And then the luncheon—was ever a picnic so perfect? Appetite is indeed the best sauce to a picnic; and the exercise, the long drive, and early breakfast has made everyone as hungry—well, as a sportsman.

See, the host places a knife into a grand pie. "What is it?" someone says. "Pork, perhaps;" but he hopes not. Pigeon, more likely; but then comes the welcome answer, "Game." And how the game pie vanishes! There is sherry and perhaps claret, but most of the men take long pulls at the sound wholesome beer, except the writer of these lines, who as a degenerate teetotaler has to go down to the stream to quench his thirst. But time is soon up. "To arms!" is sounded, and everyone jumps up and prepares to render a good account of himself now, for the best beats are always reserved to the last.

The light is getting a little bad, as, the outlying portions being shot over, the very kernel of the nut is reached. Now the excitement is intense, and the leader gives short decisive commands. "Now, you beaters, beat out the corner. Don't leave the hedge; the birds are sure to lie there." And right he is; for about five pheasants which have been covering under their last bit of shelter—their Ultima Thule—rise one after the other, and help to swell the game bags. And now we have come to the very best bit of all.

Each sportsman has a man who carries his cartridges close to his side, and as fast as he can load the faster the pheasants rise; but when the order is given, "Shoot everything!" not many get away.

And now it is four o'clock, and the darkness fast coming on as we open a staked gate and enter a field to count the game.

Ah! very good indeed! Two hundred pheasants, thirteen hares, twenty rabbits, and three woodcocks. That is the grand total which each sportsman enters on his list.

But why do the eyes of the beaters and keepers glisten so now? The day is over and the game finished, why so anxious? Ah! *they know*. It is not for nothing that the big man in what the countrymen call an "old boxer," that is a dilapidated old tall hat, it may be of silk, or still more likely beaver, and been in his family for a century. It is not for nothing he knows that he has carried these cartridges all day. And the beaters and amongst them my gardeners stand to receive the usual guerdon; and if the sport has been good a rabbit is thrown in. One by one the little stops creep in as soon as they hear the last shot fired, and the head gamekeeper tosses a rabbit to each, and off they go delighted. Then the farmers are sent happy away with a pheasant or two and a cheery word, and the game is stowed away in a cart; and as darkness settles over the wood the farmhouse is reached, where the postboys are getting the horses in the drag. And soon all are ready for the start, a chorus of good nights, a rousing call from the post-horn, and a waving of hands, and the drag vanishes from sight, and the woods are left to the poor "WYLD SAVAGE" and the birds that have escaped the fray.

Ah! but there is many a sad meeting that night in our woods. When at the Hall the guests are gathering round the drawing-room and telling their fair friends what glorious sport they have had a sad muster roll is being called in our woods. Here comes a cock pheasant, scarcely able to walk and quite unable to fly; next down flutters, or rather staggers, so unlike is it to her usual graceful movement, a poor hen with a wounded wing to tell to him the sad news that his favourite mate is dead. She knows it, for they were hiding together when disturbed; and though she herself got away, she saw her companion fall. And now creeping from that ditch, with dragged and soiled fur, drooping head, a piteous look in her eye, with one leg broken, and a pellet or two in her side, comes poor puss. And see, afraid, perhaps, to venture too near such distinguished company, but hovering outside the circle, is poor bunny. He has had a marvellous escape. Every gun was raised against him, but he was so small and dodged about so cleverly that he got away. One by one the survivors assemble and consult how they may hide before the keepers come in the morning to shoot—yes, the cripples. Ah! what has been such a high festival to the swells from the Hall has been indeed a fast day to them! A song of triumph no doubt they are singing now, while the birds and ground game are chanting a funeral anthem over their friends and relatives. But hark! what's that? Surely that inhuman cock is not

crowling so vigorously under the idea that he is joining in a dirge. But perhaps he is young, and knows not how to crow in a minor key. Let us give him the benefit of the doubt. Perhaps it is his way of showing sorrow for the death of one wife, although by the sound one would judge it was an invitation to another. One by one the survivors of the high festival seek their roosting places in the Fir trees. For a time there is a fluttering and several impatient crows, but soon they sink off to sleep; and when the moon rising late sheds its refulgent light over the sylvan scene all nature is at rest, and no sound is heard save now and then the hooting of the white owl in search of mice for his evening meal.—WYLD SAVAGE.

NATIONAL ROSE SOCIETY.

ON one of the gloomy days that is so very common to Londoners at this season a large and influential number of the members of the General Committee of this Society met together at the Horticultural Club. It was a strange sight to see the gas full on at three o'clock in the day and the blinds drawn down whilst men were discussing the queen of flowers. But the sight of a rosarian's face is pleasant at all times, even on a dark day in January; and we cheer ourselves in thinking, that now the shortest day is over, we are slowly but surely advancing to the glad season when the Rose will once more be seen in her glory.

Here at this table are seated the Rev. J. M. Fuller, the Chairman of the day; Rev. H. H. Dombain and Mr. Mawley, the Hon. Secretaries. The great trade growers are represented by Mr. George Paul, Mr. Prince of Oxford, Mr. Charles Turner, and Mr. Laing; the amateurs by the Rev. A. Cheales, Mr. Hawtrey of Slough, and Rev. J. B. M. Camm; whilst a number of rosarians unknown to myself filled the room. A good amount of business was done, and the Chairman proved a most excellent one. Mr. Prince, the Rev. C. H. Bulmer, and Mr. Camm were added to the Executive Committee, and then we went through the prize schedules for the Crystal Palace and Manchester.

The former is a most lengthy one, consisting of no less than thirty-one classes, and including every kind of entry from the nurseryman's seventy-two to the amateur's six. Very few alterations were made in it, but a few remarks were addressed by various members on the subject of the prize offered by the proprietors of the *Journal des Roses*. These gentlemen offer a medal for twenty-four distinct Roses, three trusses of each, in various stages of blooming, full blown, half blown, and in the bud. Mr. George Paul thought that this was excessive and contrary to the resolution passed at a former meeting, and on investigation it was found that he was right in saying the idea was indeed twenty-four Roses, but only eight Roses distinct, three trusses of each.

Mr. D'Ombain brought forward the generous offer made by Mr. Oliver in last week's Journal to give a prize of a silver cup for suburban Teas—not of course Teas in an arbour, but Teas perhaps over it—at all events Teas and Noisettes. After some discussion it was agreed to ask the giver to allow it to be for six Teas. Some discussion also took place as to the distance from Charing Cross, which qualified a grower to call himself a suburban. There was rather a general opinion that eight miles was a little too confined an area, but Mr. Mawley, who originally started the idea, was of a contrary opinion, and meeting gladly gave way to his wish.

With regard to Class 21, in which Mr. J. Simons offered a five-guinea cup for sweet-scented Roses, some discussion took place as to the number. Some members thought that twenty-four, the lowest number named by the donor, was too large, and a certain veteran, the hero of a thousand fights, was a little alarmed as to the state of his nose after being called upon to inhale the perfume of several hundreds. He said in a most touching voice, "When you are tasting Melons you are allowed a drop of brandy to help you, but I don't know what we can do when we are smelling Roses." "Take a little ammonia with you," said a great rival; while a little man, who had occupied a very humble position during the meeting, ventured to hint that a pinch of snuff would be a powerful help under such circumstances. Twenty-four distinct trusses was at last agreed upon.

The Manchester schedule was then discussed. This is a very unpretending and short document. It bears the same relation to the Palace one as a Rose de Meaux does to a Paul Neyron, or the dog Impudence to the mastiff Dignity in Landseer's picture. Here we have only seventeen classes as against thirty-one. One more was added on this occasion—viz., a class for six new Roses not in commerce previous to 1877.

The burning question of Hybrid Teas was hinted at, but postponed for a year. Pedigree Roses were also shunned, as it was felt but little was known. A division took place on the question of a note being appended to the schedule, saying Hybrid Teas were not to be admitted into Tea boxes. This was carried by the small majority of two.

A vote of thanks to the Chairman finished the proceedings, and the members separated, but most of them remained to dine at the annual dinner of the Horticultural Club.

The Society is sailing on a smooth sea with all her sails unfurled, and if only the weather is propitious such a meeting will be held at the Crystal Palace this year as even that famed home of the Rose has never seen.—W. S.

NOTES ON VILLA AND SUBURBAN GARDENING.

KITCHEN GARDEN.—Advantage should be taken of a fine dry day to clear off all the Broccoli which has been destroyed by frost, or they will soon become offensive. In few gardens will there be any left, so complete has been the destruction, owing no doubt to the extra luxuriant growth being exposed to such a very severe frost so early in the season. Where any have apparently escaped it is very advisable to lift them with good balls and bed them in closely and deeply, completely burying the stems, and sloping northward to avoid a too rapid thaw should they again become frozen. A convenient spot should be selected where they can be covered during severe weather with either straw, fern, or any other protecting material, otherwise a very moderate frost will complete the work of destruction. The stems are generally the soonest affected by frost, and probably many of those that have apparently escaped will eventually topple over.

Readers for whom this column is intended are recommended to follow the advice given from time to time. The reason for offering this instruction is simply because we are aware how difficult it appears to the inexperienced to know when seeds should be sown and other work done, no matter how many catalogues, serials, and works on gardening generally they may have; for as a rule, the more oracles consulted the greater the confusion; hence the advisability of closely following the advice of one in preference to attempting to cull from so many. Some of the many catalogues annually distributed contain some very sound advice, but as they are prepared before the year even commences they must not be followed too closely without due regard being paid to the peculiarities of our climate. One we have before us advises sowing the seeds of several kinds of vegetables in the open ground during this month. Our advice is to do nothing of the sort, simply because little would be gained. On the contrary, in the majority of instances much loss of labour and seeds would be the result. Peas for sowing this season are admittedly badly harvested, and for this reason if sown early in the present extremely cold state of the ground will germinate very indifferently. Even if they do "come up" they will make but little progress, thus being longer exposed to the attacks of birds, slugs, and other enemies; and although they may come into bearing a few days before those sown in February, the crop will in most instances be much inferior. Amateurs will do well not to attempt seed-sowing this month, but should at once order their seeds. Many, no doubt, buy the collections as advertised, and probably are well satisfied with them, as it is certain that by no other means can seeds be bought so cheaply. We, however, question the saving effected, and strongly advise a rather larger outlay in the first instance, thus securing a more satisfactory and choicer supply of vegetables. This is stated, it must be understood, without any wish to underrate the value of the collections offered, as they are certainly, taken on the whole, marvels of cheapness.

For the benefit of those who intend to select their own varieties we will give a selection of vegetables to be followed by one of flower seeds. Where stakes have to be bought for Peas the crop becomes expensive, and therefore, on the score of economy, they should be grown without stakes, as they succeed remarkably well in this way providing suitable varieties are grown. The following will be found well adapted for this treatment. The quantities given both of Peas and other vegetables will be found sufficient for a small garden. Peas for the early sowing—Caractacus, Sangster's No. 1 or William the First, giving the preference to the latter; to follow these, either Advancer, Alpha, or Laxton's Supreme, preferring the former; to succeed these, either Doctor McLean, McLean's Prolific, James' Prolific Longpod, or Fillbasket, the first and last being the best; and for later sowings either Yorkshire Hero, Blue Scimitar, Veitch's Perfection or McLean's Premier, giving the preference to the first and last. One pint of each preferred variety or six in all will be found sufficient. If taller varieties are required, see remarks on Peas on page 12. Broad Beans—one pint each of Early Longpod and Green Windsor. Kidney Beans—half a pint each of Osborn's Forcing (the best early variety either in the open ground or pots), and either Canadian Wonder or Negro Longpod. Runner Beans (also to be grown without stakes)—one pint of the Scarlet. Of Beet one ounce of Osborn's Select, Dell's Crimson, Sutton's Improved, or Carter's Perfection of Beet, with a small packet of the Turnip-rooted for the earliest supply. Of Carrots one ounce each of the Early Red Horn and James' Intermediate, or two ounces of Nantes Horn only if the soil be shallow. Of Kale one quarter of an ounce of Dwarf Green Curled, and a similar quantity each of Imported Brussels Sprouts, Early Ulm and Little Pixie Savoy, Walcheren, Early Purple Sprouting, Knight's Protecting, and Catell's Eolipse Broccoli, and a packet of Snow's Winter White and Leamington Broccoli may with advantage be bought. Of Cauliflowers one quarter ounce of either Early London or Dwarf

Erfurt Mammoth, and a small packet of Veitch's Autumn Giant. Of Cabbage one quarter ounce of Enfield Market for early work, and either Nonpareil or Shilling's Queen for Coleworts. A small packet of the Leicester Red Celery, and if a white variety is wanted Cole's Crystal White. All the Year Round and Neapolitan are good Cabbage Lettuces, and the Paris White and Green Cos are both excellent; the preference should be given to the first named in each instance. The Black-seeded Bath Cos is a very hardy variety, and ought to be included, one quarter ounce packet will be sufficient both of these and the Green-curled Endive. Of Onions half an ounce each of the Deptford, James' Keeping, and Tripoli, the latter for autumn sowing. Of Parsley half an ounce. Parsnips—The Student, one ounce. Radishes—one ounce each of either Wood's Frame or the French Breakfast and mixed Turnip. Spinach—half a pint each of Round or Summer Spinach, and the Prickly or Winter Spinach. Tomatoes—small packets of Hathaway's Excelsior and Vick's Criterion, giving the preference to the former if one variety only be required. Turnips—one ounce each of Snowball and the American Red Stone, and to these Chirk Castle Black Stone may well be added. Cucumbers—Rollison's Telegraph for frames, and the Stockwood Ridge for open air; and where Melons are grown, Victory of Bath, green-flesh, and Read's Hybrid, scarlet-flesh, will be found satisfactory; and of Vegetable Marrows the Long White. Order small packets of each. No house is required for Mushrooms, and if horse droppings and loam are available order half a bushel or more of Mushroom spawn. Early Potatoes only should be grown in a small garden, and of these the best are Mona's Pride, Rivers' Ashleaf, and the old Ashleaf Kidney, giving the preference to the former; and if a round variety is required, either Fox's Seedling or the Early Don (a variety largely grown for the markets), in all about three pecks may be ordered. All or nearly all of the above varieties will be found in every good catalogue, and none are very expensive.

WORK FOR THE WEEK.

HARDY FRUIT GARDEN.

FROM unavoidable circumstances the planting of young fruit trees has been deferred—indeed Peach and Nectarine trees still retain their leaves. In planting a new garden or orchard, if the ground has not been previously trenched it will be advisable at the present to mark the stations of the trees and make holes 6 to 8 feet in diameter, turning out the top spit and afterwards trenching the bottom to a depth of 18 inches; but should this be heavy clay or other unfavourable material a portion should be removed and a good layer of stone, brickbats, or rubble placed in to form an efficient drainage. Means also must be taken for the thorough drainage of the ground generally. All hardy fruit trees may be planted during the next month and later, provided care is taken to expose the roots to the air as short a time as possible; indeed, in cold soils, and where circumstances are otherwise ungenial, it is questionable whether spring planting is not preferable, unless planting can be done sufficiently early in autumn to admit of the formation of fresh roots before the ground becomes cold and wet. The favourable change in the weather will admit of pruning being followed up, and where not already completed Apples, Pears, Plums, and Cherries, where grown as pyramids, bush, cordons, or espaliers, should be first attended to, so as to admit of the borders being cleaned. In pruning it should be remembered that some Apples and Pears produce their finest blooms from the terminal buds of last year's growth, therefore only excessively gross shoots must be pruned in; but if summer stopping of the stronger shoots has been attended to, as well as root-pruning if necessary, there should be little use for the knife at this season, except to thin out wood or spurs where too thick. When the flower buds are very thickly set it is well to thin them, so as to give additional strength to those left. An overcrop of bloom is often fatal to the fruit setting or swelling properly afterwards, as the trees are too severely taxed. Pyramid Plums, Apples, and Cherries promise well, but Pears are very variable, though some varieties—as Jargonelle, Seckle, Comte de Lamy, Thompson's, Beurré Diel, Zephirin Grégoire, and Bergamotte Espéren, appear well in the open. After the pruning is finished the loose surface soil should be removed and a surface dressing applied of fresh loam and decayed manure in equal parts, to which may be added a twentieth part each of wood ashes and bone dust. Where necessary to make fresh plantations of bush fruits the ground should be well trenched and plenty of manure applied, so as to be in good condition for planting next month. If a good crop of fruit be a desideratum no quarter must be given to bullfinches, as a pair of these birds will in a short time do the trees great injury. Proceed with the pruning and nailing or tying-up of fruit trees against walls as the state of the weather permits.

FRUIT HOUSES.

Vines.—Thick-skinned varieties of Grapes may be removed to a dry room, where they will keep quite as well as if left on the vines. Cut the bunches with as much wood attached as can be spared, and place the stems in bottles filled with soft water, and each containing a few pieces of charcoal. The bottles should be fixed in an inclined position so as to admit of the bunches hanging

clear of them, and they should be so far apart as not to allow the bunches to touch each other. Keep the temperature of the room at about 45°, examining the bunches occasionally for decayed berries, which should be carefully removed. The Vines should then be pruned, dressing the cut surface with Thomson's styptic or patent knotting, and the houses thoroughly cleansed. Air should be admitted freely in favourable weather, seeking to give the Vines as long and complete a rest as possible. Where the borders are not satisfactory lift the roots and relay them in fresh compost; and where the Vines have inside and outside borders the renovation may be accomplished without loss of crop by renewing the former one year and the latter the next. Avoid in the early houses a close vitiated atmosphere. Ventilate when the weather is suitable, closing early, and allowing the temperature to rise to 80° on fine afternoons. Allow the laterals of Vines in pots to extend beyond one joint, as the more foliage a Vine has fully exposed to light the greater will be the root-action and the better nourished will be the fruit. Water with weak liquid manure slightly in advance of the temperature of the house, and apply a surface dressing to the soil of decayed manure. Discontinue syringing after the Vines commence flowering, as a somewhat drier atmosphere is desirable at that time; but when the berries are set keep the floors and walls damp by sprinkling during the day, and if there be evaporation troughs keep them constantly filled with guano water, 1 lb. to 20 gallons of water. Disbud the Vines in successional houses, removing the weaker shoots, and leaving one shoot to each spur, though where the spurs are a good distance apart two shoots may be allowed, especially where the space is not sufficient to allow of a good extension. The extra foliage, always providing it can be properly exposed to light, will do much to encourage root-action and secure well-swelled berries.

Cucumbers.—The night temperature should be maintained at 65°, allowing 5° more in mild weather, whilst it may fall 5° less on cold nights; 70° to 75° by day and 80° to 85° with sun heat. When the external air is mild a little air may be given at 80°, closing at that degree; but if the external air is cold, although the sun shines, it is better to allow the temperature to advance a little beyond the above limits. Plants in bearing will require to be examined about twice a week, removing all weakly and exhausted growths, reserving as much of the young bearing wood as is necessary to fill the allotted space, stopping the shoots at one or two joints beyond the fruit. Young plants just coming into bearing should not be allowed to bear too soon, and by no means be overcropped; they are greatly assisted by removing the male blossoms as they appear. The supply of moisture both at the roots and in the atmosphere must be governed by external circumstances. Syringing should be discontinued except a light sprinkling in the early part of bright afternoons, damping the floor moderately at about 8 A.M. and 2 P.M. Encourage the roots to spread on the surface of the bed by adding a little lumpy loam from time to time, with which may be incorporated a little well-decomposed cow dung. Keep a sharp look-out for aphides, and fumigate several times moderately and consecutively rather than once severely. Canker is not uncommon at this season of the year, fresh slacked lime rubbed into the affected parts will arrest its progress. If mildew appear dust with flowers of sulphur.

Melons.—Keep the young plants in a brisk heat and near to the glass. Do not pot off the plants until they are growing freely, but earth them up a little in preference.

Strawberries in Pots.—When the plants commence flowering admit air freely and remove the weaker blossoms, and when the pollen is ripe brush the flowers lightly with a feather. After the fruit is set thin them to about half a dozen, more or less according to the variety. Whilst the fruit is setting 50° to 55° will be sufficient heat artificially, advancing to 60° or 65° with sun heat; but after the setting is effected remove the plants to a house with a temperature of 60° to 65° artificially and 70° to 75° by day, supplying liquid manure until ripening commences, then employ water only and sparingly. See that successional plants do not require water and are not brought forward too rapidly in the early stages. If there be any trace of aphides fumigate moderately.

PLANT HOUSES.

Orchids.—At this season of the year very few plants will be in active growth; therefore advantages should be taken to thoroughly clean every plant. For scale methylated spirits applied with a brush is a sure remedy, keeping it from the roots, afterwards washing with a mixture composed of three-quarters of a pound of soft soap to a gallon of soft water, and washing this off with clean water. Thorough cleanliness in the plants is not only essential to their well-doing but improves their appearance. Keep the glass clean both inside and outside, as it is impossible to afford too much light at this season, and the clearer the light the brighter the flowers. Be careful to avoid superabundant moisture, which will quickly injure the plants in the dull season when little air can be given. East Indian Orchids, however, that have no pseudobulbs should have the moss damped every morning, which will induce the root growth outside the pots, especially Phalaenopsis. The terrestrial *Calanthes* should have a good supply of water as often as the soil becomes dry. Weak liquid manure will assist

them to produce strong spikes, but varieties of *Calanthe vestita* should be kept dry for the present. *Cypripediums* will require a plentiful supply of water. Care must still be exercised not to excite the *Dendrobiums*, but they must not be allowed to shrivel, the same remark applying to *Cattleyas* and Mexican *Orchids* generally.

TRADE CATALOGUES RECEIVED.

- Kelway & Son, Langport, Somerset.—*Seed Manual for 1880.*
 Thomas Bunyard & Sons, Maidstone.—*Catalogue of Vegetable and Flower Seeds.*
 Corry & Soper, Shad Thames, London.—*List of Horticultural Requisites.*
 John Perkins & Son, Northampton.—*Catalogue of Vegetable and Flower Seeds.*
 Stuart, Mein, & Allan, Kelso, N.B.—*General Seed Catalogue.*
 J. G. Hills (late J. Scott), Yeovil.—*Catalogue of Vegetable and Flower Seeds.*
 F. C. Heinemann, Erfurt.—*Catalogue of Vegetable and Flower Seeds.*
 J. C. Wheeler & Son, Gloucester.—*Select Seed List.*
 Francis and Arthur Dickson & Son, 106, Eastgate Street, Chester.—*Catalogues of Vegetable and Flower Seeds.*
 Charles Turner, Royal Nurseries, Slough.—*Catalogue of Vegetable and Flower Seeds.*

TO CORRESPONDENTS.

HEATING HOUSES WITH DUPLICATE BOILERS (A Subscriber).—Your proposed mode of heating will answer, but you will require a valve on the flow pipe in the connection between the two boilers and another on the connection between the boilers of the return pipe. You will also require a valve on the flow pipe between the two houses, and another on the return. These for the boilers will be necessary, so that they may be worked separately or together, and those between the houses for similar purpose, and to regulate the heating, as there will be a tendency on the part of the hot water to circulate more freely in the pipes on the higher than the lower level. The air pipes in the house on the lower level will need to be lengthened so as to be of the same height as those in the house on the higher level, or the water will be continually running over. We should have the pipes on the higher level so supplied with water that the pipes at the highest point before making their return will be about three parts filled with water when the apparatus is cold, the feed cistern being fixed at such a height as to secure this, which will allow for the swell of the water and prevent waste from the flow pipes.

ORCHIDS FOR GREENHOUSE (R. P.).—*Calanthe Veitchii* would not succeed, but the following would if placed in a position where the air is rather close and moist, a dry atmosphere and draughty position not being suitable for Orchids:—*Cattleya citrina*, *Cypripedium insigne*, *C. venustum*, *Epidendrum macrochilum*, *E. vitellinum majus*, *Oclogyne cristata*, *Leila autumnalis*, *Lycaste Skinneri*, *Masdevallia Harryana*, *Odontoglossum Alexandre*, *O. cirrhosum*, *O. insigne*, *Leopoldinum*, *Oncidium bifolium majus*, *O. leucochilum*, and *Pleione humilis*. Many Orchids will thrive in a greenhouse temperature that will not succeed in greenhouses in sunny positions and where very free ventilation is requisite for the health of the other occupants.

VINES FOR GREENHOUSE (Idem).—You could not have any better varieties than Black Hamburgh and Foster's Seedling. You may plant the Vines in spring when they have made an inch or two of growth; but they should be procured now and pruned to the length required. The roots should be disentangled and laid out straight in the border, covering them about 4 inches deep, and after a good watering with tepid water mulch with short manure. The border should be taken out 3 feet deep, have a drain at the bottom with proper fall and outlet, about 9 inches deep of bricks or rubble placed at the bottom for drainage, and over that a layer of turves grass side downwards. The border may be formed of the top 3 or 4 inches of a pasture where the soil is a medium-textured loam preferably light, adding one-tenth of old mortar rubbish, a fifteenth part of charcoal, and a thirteenth part of half-inch bones, the whole thoroughly incorporated. The materials should be procured at once so that the border may be made during the early part of March, selecting dry weather. If the soil be good loam and well drained good crops of Grapes may be obtained. It is essential that the soil be light and the subsoil free of stagnant water.

CELERY EATEN BY INSECTS (J. L. B. R.).—There were no insects in the box. Whether the insects of which you complain are such as usually appear on decaying vegetation or not we have no means of ascertaining. If your garden is infested with grubs of any kind we know of no better remedy than gas lime. If a good sprinkling, sufficient to just cover the ground, is forked into the soil a few months before the time of sowing or planting it will act beneficially in eradicating various insect pests. The gas lime should not be employed immediately before cropping the ground, or if it is it should be used very sparingly. A slight surface dressing applied between the rows of various crops in spring is useful in banishing slugs and other pests, but it should not touch the plants, or if fresh it is almost certain to injure them.

GYDE'S IMPERIAL FERTILISER (Norman).—We have not used it, but the testimonials from practical authorities are highly in its favour.

FRUIT TREES FOR NORTH ASPECTS (Uxbridge Amateur).—Such early Pear as *Doyenné d'Été*, *Jargonelle*, *Williams' Bon Chrétien*, and *Buerre d'Amanlis* will succeed in your district, as will all varieties of early Apples; also all but the very latest Plums and Cherries. Had you stated the number of trees of each kind of fruit you require we could have given you more explicit information. To give a list of two dozen varieties that we could well select would be more bewildering than useful to you if you are only wanting half that number or less of trees. Correspondents cannot be too precise in stating their requirements.

CHEMISTRY (Young Gardener).—A knowledge of chemistry is of great utility to a gardener, as it enables him to understand the composition of

soils, the effects of manures on plants, and the various phenomena connected with the maturation of fruits. With respect to your second question as to whether you could learn the science without an instructor, we can only remark that by steady application to a good elementary work, such as "Roscoe's Elementary Chemistry" or "Chambers' Chemistry," you might obtain a valuable knowledge of the most important and fundamental facts, but a more advanced acquaintance with the science could only be gained by attending lectures accompanied by experiments. The books mentioned above can be purchased for 3s. or 4s. each, and can be ordered at any bookseller's. As to whether you will take an interest in the subject or not we cannot tell, but unless you possess an earnest desire to overcome the difficulties necessarily attendant on studies of this character your time will be in a great measure wasted.

GRAFTING VINES (Ebor).—The Muscat of Alexandria forms one of the best of stocks because of its free-rooting character. If the Vines are quite healthy you may inarch the Black Hamburgs and other varieties you wish to grow on them, and these varieties will not require more heat than if growing on their own roots.

POINSETTIA LEAVES FALLING (F. S.).—The leaves always turn yellow and drop off after the plants have been in beauty for some time; but the change and casting of the foliage is accelerated by the checks the plants have received either by sudden changes of temperature or extreme dryness of the roots even if only for a few hours. If the plants to which you allude had been grown in a very warm house, and especially if the pots had been partly plunged in a hotbed, the journey to which they have been subjected is quite sufficient to cause the loss of foliage. Continue watering them regularly as long as the bracts remain fresh and bright, then gradually withhold water until the soil is quite dry. After a few weeks of rest the plants may be cut down, the growths being made into cuttings and inserted in sand, one joint below and one eye just above the surface. If the pots are placed in heat these cuttings will emit roots, and with good culture form fine plants during the season; cuttings of the young shoots (that are produced if the plants are not cut down) strike freely if inserted when 3 inches long and placed in brist moist heat and shaded so as to prevent flagging. The old cut-down plants, when they have made half an inch of fresh growth, should be shaken out of the pots and be repotted in fresh soil, and if properly treated they will produce large heads of brilliant bracts by next Christmas.

AURICULAS UNSATISFACTORY (R. J. K.).—Assuming that the drainage of the pot is efficient we should not disturb the plant at present. When signs of fresh growth are apparent in the spring apply a top-dressing of two-thirds of sweet turfy loam and one-third of leaf soil or very old decomposed manure, packing it well round the stem. If some crushed charcoal is mixed with the compost all the better. If the surface-dressing is kept healthily moist, by no means stagnant, fresh roots will probably issue from the stem and take possession of the soil. After the blooming period, or about the end of May, shake the plant out of the pot, cutting off the lower portion of the root stem below the fresh healthy roots, dress the wound with dry charcoal dust, and repot in a small, clean, well-drained pot, and with good attention you will probably have a healthy plant during the season. The stocks of certain Auriculas are limited, and vendors are often obliged to send a poor plant, or not execute an order at all; the former is the more tempting, but the latter perhaps the more satisfactory alternative.

CYPRIPEDIUM INSIGNE (W. E. M.).—A compost consisting of two-thirds of very rough peat, one-third of turfy loam, and a free admixture of broken charcoal will grow the plants well; most of the loose soil should be shaken from the peat and loam so that you have a free open mass in which the roots delight to penetrate. Place abundance of drainage in the pots so that you can apply water copiously when the plants are in full growth without impairing the sweetness of the soil. Place the plants in the cool stove after potting them, and let them remain there until the Vines are showing their bunches, when the temperature will be suitable for the Cypripediums. Do not overpot the plants, and withhold water to some extent when the growth is completed. C. Edeni is a most useful variety of easy culture, and it thrives better if chopped sphagnum is freely mixed with the compost, and the plants should be potted rather high—i.e., elevated a little above the level of the pots.

DENDROBIUM NOBILE (Idem).—You must decide for yourself as to dividing the plant. If you prefer one large specimen to a number of smaller plants do not divide it; but in any case we should not sever it into very small pieces, probably three would be sufficient. In potting employ very small pots; indeed they cannot be too small provided you can crowd the roots into them, and at the same time surround them with a little fresh compost, which should consist of sphagnum, very turfy peat, and charcoal. The pots should be more than half filled with broken pots, and the plants be raised above the rims and kept in position by the aid of sticks and copper wire. Place them in the stove and syringe them frequently during bright dry weather. Excessive syringing during dull weather often causes the young growths to decay. Other Orchids suitable for you are *Ondoglossums* *Alexandriae* and *erichsonii*, and you will also find some others named in reply to "R. P." that may be useful. *Gardenias* and *Tabernaemontanas* will succeed in the same temperature as *Bucharias* and *amazonica*. Your other questions will be answered next week.

PLANTS FOR GREENHOUSE (Freemason).—It is not easy to name "the most suitable greenhouse plants that do not require being grown near the glass" without our knowing something of the house in which they are to be grown. Some greenhouses are so light and well arranged that most kinds of plants flourish in them, except during the early stages of growth, when at a distance of 6 feet or more from the glass; while in other houses, those that are more or less shaded, or have dark heavy roofs, the plants would not long remain healthy at half that distance from the glass. Such plants as Palms, tree and other Ferns, ornamental-foliaged Begonias, *Aspidistras*, and *Cordylines* succeed well at almost any distance from the glass, and when clean and healthy are at all times attractive. Of flowering plants *Camellias* and *Azaleas*, especially the former, do not require intense light, and produce a fine effect in the spring. For summer decoration *Liliums*, especially *L. auratum* and the varieties of *laecifolium*, are both beautiful and sweet. They should be grown in cold frames in their early stages, and afterwards in the open air until they show their flowers. For the autumn *Chrysanthemums* to be grown outdoors in summer are indispensable. With the aid of shelves suspended in the house and the assistance of a cold frame or two you may have such plants as *Spiraeas* (*Hotchias*), *Primulas*, *Cinerarias*, *Calceolarias*, *Pelargoniums*, *Fuchsias*, and all the usual bulbous plants that are so enjoyable during the spring months; for after all these

plants show their flowers they will succeed at any reasonable distance from the glass. Greenhouses cannot be kept constantly gay without the provision of cold pits or frames for preparing the plants, but much may be done without these useful adjuncts when shelves are suspended near the glass in all suitable positions for the accommodation of young and dwarf-growing plants.

MEALY BUG ON VINES (J. V.).—You cannot do better than follow the instructions given to "AMATEUR GRAPE-GROWER" last week on page 32. Methylated spirits applied with a brush will kill mealy bug, and we have known plants quite cleaned of the pest by syringing them with a solution of paraffin and water—half an ounce of the oil mixed with a gallon of water, alternate syringfuls being forced into the vessel and on the plants. We prefer, if possible, preventing the appearance of the pest by frequent syringings of pure water than permitting it to become established so as to render stronger measures necessary for its destruction.

WEEVILS IN VINEY (W. J.).—The beetle that is attacking your Vines with such destructive effect is *Curculio picipes*. The weevils feed principally during the night, and unless you adopt prompt remedial measures the Vines will be ruined. By shaking the Vines sharply, spreading a cloth under them, a number of the beetles will be dislodged and secured; but probably not all, as they adhere to the leaves with considerable tenacity. By careful examination during the afternoon see that the Vines are clear, then form barriers of cotton wool on their stems, which smear with tar or paraffin, and you will prevent many weevils reaching the foliage. Syringing the Vines with a solution of quassia and tobacco water is recommended so as to render the Vines distasteful to the pest; but catch and kill all the weevils you can, so as to check their increase. By working assiduously for a few nights you may probably succeed in destroying a great number of them.

NITRATE OF SODA FOR STRAWBERRIES (R. S.).—The advice that has been given to you is not only indefinite but is not sound. If you require a stimulant for the Strawberries mix together one-third of nitrate of soda and two-thirds of superphosphate of lime, and when the plants are showing their flower trusses in the spring sprinkle the mixture regularly on the surface of the soil, but not on the plants, at the rate of about 2 oz. per square yard, not more. If the soil is of a dry gravelly nature you may add salt nearly equal in quantity to the nitrate of soda; but if the ground is heavy and wet salt will not be advantageous. You may give a further dressing when the fruit is swelling, applying the stimulant if possible during showery weather or just before rain.

STARTING TUBEROUS BEGONIAS (J. W. S.).—For starting them early in the season or during the first three months of the year bottom heat is of great advantage; but for starting them later during April and May "bottom heat is not absolutely necessary." Sound healthy tubers usually start freely at that time in a genial temperature of 55° to 65°, and form good plants during the season.

MYTON HALL CUCUMBER (Constant Reader).—We are unable to inform you when and where this Cucumber was raised, or the name of the raiser. Mr. Horner, who has been gardener at Myton Hall, near Helpertby, Yorkshire, for twenty years, informs us that the variety has not been raised there during that time.

NAMES OF FRUITS (—).—1, *Beurré Clairgeau*; 2, *Bezi de Calmy*; 3, not known; 4, *Bellesme d'Hiver*. We have several boxes of fruit without the names of the senders, and in some cases the fruits are not numbered. The naming of fruit under these conditions would be obviously useless, as the above example shows, for the sender cannot recognise his own fruit.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

PARING AND BURNING LAND.

(Continued from page 33.)

WE must now, in addition to our experience in this work, offer illustrations of the experience of others who are well qualified to deserve and command the attention of the home farmer. An excellent farmer in the county of Gloucestershire in relating his experience upon entering on the occupation of a strong clay land farm writes as follows:—"I made my first attempt to benefit the land, which was in a poor and neglected state, by burning the clay, converting the foul surface of the land into ashes, which proved of great value in the future cultivation of the land—not only by the cleaning, but by the manuring of it likewise at one and the same time. The first field operated upon was 1½ acres of the worst description of clay, on the side of a steep hill, wholly inaccessible to the dung cart. It had been allowed to run to waste a few years before it was taken in hand. The tenant on quitting ploughed the land once; the incoming tenant offered in the middle of the summer to take it on, in order that the burning of it might begin at once. The land was immediately scarified and dragged to work the clods of couch and wiry grass to the surface, with the quantity of soil attached necessary to procure a good dressing of ashes; the weeds were forked together, and burned in heaps of about a cartload each, with wood cut from the wild and neglected hedges surrounding the field, at the cost, including spreading of the ashes, of £2 per acre; much value could not be put upon the wood, but the cutting and lying would be about 5s. per acre. The land, after the

ashes were ploughed-in shallow, was sown with vetches, which were eaten off by sheep in the summer. The field was then sown with wheat, which produced a little over 80 bushels per acre being a very good crop for such a soil. It was sown with grass seeds upon the wheat, and the land was kept in grass, carrying a much greater stock than it had ever done before. It was further contemplated, in the event of its deteriorating, to again plough and seed with vetches to be consumed as before, and again to be sown with wheat and seeded with grass, and laid down again.

"Another field adjoining the before mentioned, not being quite as bad as is valued at 7s. 6d. per acre rental, was entered upon in the month of May; at the time a foul bean stubble. It was skim-ploughed to the depth of about 1½ inch, and all the plough turned over burned with faggots, at the cost of, including spreading ashes, 42s. per acre, and after being sown with vetches and managed as before stated in the other field, the crop of wheat proved to be 45 bushels per acre, of 62 lbs. per bushel. As the wheat was sold at 7s. per bushel this experiment was highly remunerative to the tenant, and offers a very useful result to encourage the home farmer to pare and burn such a soil under similar circumstances, whether the land is laid down to grass or cultivated in the future." The next is an illustration of paring and burning in the autumn. A field being a wheat stubble was as foul as possible with couch, but after harvest, the weather being favourable, the surface was skim-ploughed, and attempted to be dragged, but that was impracticable; it was so tied together that it could only be parted with forks, which increased the cost of burning to about 50s. per acre; but it was well repaid, for the quantity of ashes was estimated at 150 to 200 yards per acre. The value of these ashes, both mechanically and chemically, must have been enormous, and the home farmer will be enabled to understand their value presently when we give the result of the experiments carried out by Dr. A. Voelcker.

There is another mode of procuring ashes from clay which, though somewhat more expensive, has its advantages, and is often done at a time of year when the ordinary plan would be impossible from wet. It is by burning the turf in large fires, with coal yielding from 50 to 200 yards of ashes, and carting and wheeling the ashes upon the land. Much has been done in this way, and the cost, not including horse labour, is as follows:—100 yards per acre, labour of burning 50s.; 2 tons of coal at the price of the district, from 10s. to 18s. per ton. With regard to the burning with coal, or in any of the ways indicated, success will depend entirely upon how the work is done, and it is not advised to commence operations without seeing how it is done by men who have had some experience, as it is difficult to give a description which would be sufficiently intelligible to enable any one a stranger to it to practise it with success. We can, however, say with safety that in getting poor clay land into cultivation there are no means by which it can be accomplished in so short a time and with so great a certainty as by burning. Obtaining men skilled in the work may be difficult in some districts. It can be done, however, by advertising in the newspapers of the western counties, especially in Gloucestershire.

We must now refer to the record of experimental investigations made on this subject by Dr. A. Voelcker, one of our greatest authorities upon many points and practices in agriculture and scientific farming. He says, "I am prepared to adduce reasons, founded upon analytical evidence and well-established agricultural experience, in support of my conviction, that paring and burning on some kinds of soils is not only a profitable operation, but that it is, under certain circumstances, by far the most rational plan of cultivation which can be adopted in our present state of knowledge for raising upon some kinds of land the largest amount of produce with the least expenditure of money." In connection with the policy of paring and burning we must expect to meet objections and to encounter some opposition from both practical men and theorists also, the former through want of experience, and the latter through misapprehension of the teachings of science. Various objections have arisen from time to time. There have been three principal ones which we shall refer to separately. The first objectors condemn the practice because they say it destroys the organic or vegetable matters in the soil, and that it causes a waste of most important class of fertilising constituents. In reply we do not deny that vegetable matters are soil constituents under all circumstances, and prove more or less valuable as fertilisers; in fact, well cultivated and productive soils (like many rich wheat lands and most garden soils) invariably contain much organic or vegetable matter, which circumstance has led many agriculturists to suppose that the productiveness of the soil depended upon their relative proportions found therein. Not many years past it was customary for agricultural writers to estimate the relative state of fertility of different soils by determining the amount of humus or decomposed vegetable matters in each. This, the home farmer must understand, is clearly contrary to reason and well-ascertained facts, for there are soils which, like peaty lands or the soil of poor pastures, contain a large per-centage of vegetable matter, and yet are comparatively sterile. On the other hand there are many very fertile clay soils which contain hardly any humus, and yet are highly productive, and which for this reason may with much

advantage be subjected to the process of burning. The second objector admits that two or three good crops can be grown after paring and burning, but says that the land will be left in such a state of exhaustion that the future cost of bringing it into a productive state again will be greater than the temporary benefit derived from paring and burning. This objection would indeed have some force if it only applied to paring and burning for corn crops, and the sale of both corn and straw off the farm and nothing returned. It is, however, most common to pare and burn in preparation for root crops, and the roots being consumed upon the land by sheep; by this means the mineral matters taken up from the soil by the root crop are restored to it almost entirely in the sheep's excrements; this, added to the numerous fibres and decaying leaves, enriches the land sufficiently in vegetable or organic remains to meet the requirements of subsequent corn crops, thus there is no fear of the land being impoverished by paring and burning.

(To be continued.)

WORK ON THE HOME FARM.

Horse Labour.—Since the break-up of the long frost heavy rains have prevailed, but upon all dry land the wheat-sowing may be proceeded with if the land will only work fairly and the seed can be buried—that is all that is required upon dry land; in fact, the heavier the land is the more likely is the crop to be good in all sowings after the commencement of the new year. The same may be said of strong land. In case, however, of a continuance of heavy storms the ground may not be ready for sowing quite so soon as really dry soils. In either case, whilst the weather is uncertain it is best to put on so many ploughs, or as much horse power for the work as may be required, so that the ploughing and sowing may proceed continuously, in order that at any time of the day if the weather should change there may be no ploughed land left unsown, because when that is the case, or when frost occurs, we have known the seed time delayed for weeks. Ploughing and sowing as the work proceeds is the only safe practical method of proceeding in any of the winter months. When the horses cannot work on the land there should always be work found for them, it being a bad plan and very much against their health to be idle, even for a few days; because if we desire to keep horses in good health and condition, it is best to feed them well and work them with regularity. If the home farmer has adopted the system we have so often recommended in these columns—viz., to use earth as a bottom for all stalls or pens where cattle, horses, pigs, &c., are accommodated—the obtaining earth from all parts where it can be found may well fill up the leisure time of the horses, carting the soil to large heaps cast up in a conical shape; it will then become mellow and fit for use at any time. The earth at the side of the parish roads may now be carted to heap, the same from borders and ditches, also the sides of the farm roads leading from field to field should be laid into shape by keeping them in rounded form and carefully taking on the water tables. The farm roads need not ever be overlaid with gravel between the fields if they are kept in shape, and the accumulations in the water tables carted away when necessary. If the home farmer can quite understand the advantage of earth as we do he will never be at a loss to find earth adapted for the purpose upon any farm. We have never seen a farm even on the chalk hills where earth could not be found for use in the farm buildings. Clearing out the borders of fields will yield large quantities of useful calcareous soil, well adapted for our use after lying in heap for a few months, and greatly facilitate keeping the borders of fields in a cleanly state.

Hand Labour.—Since the heavy rains which have prevailed it will be found on much of the strong soils where wheat has been sown that sand and earth will have accumulated in the water furrows. This necessitates the care of men, who should with shovel in hand look to it, and open the furrows, spreading the soil removed thinly over the adjoining ridges. Upon some of the mixed soils where the Swedes, &c., are growing the water furrows may be treated in the same manner, because where water is allowed to stagnate the roots are sure to decay, especially upon some parts of fields where the soil is strongest. It will soon be time to look out for seed potatoes, but at any rate to make up our minds and decide upon the best variety for field cultivation; and it is quite important also to consider the best change from whence to obtain our seed tubers, for we cannot under any pretence recommend the home farmer to sow seed the produce of the same farm or district. Whichever variety we decide upon let it be a variety free from disease hitherto, or at least that has suffered but little. Now this applies to several, such as the Champion, Magnum Bonum, Schoolmaster, &c.; in fact, it is quite useless in ordinary use to risk any which has previously suffered extensively from disease. The first-named produces an immense quantity of haulm, the other two have less haulm. This matter is of more consequence than is supposed by many, because we have found in practice that those varieties which have the least haulm will produce the best crop of corn afterwards; and when we have cultivated the Fluke, which we did for many years as they throw very small haulm, we could always grow 6 or 8 bushels more wheat after them than we could after any variety which formed very

out for the day to greet each other with a hearty shaking of hands, and the wishes of a Happy New Year. And the Aberdeen folk seem to possess a happy knack of this sort of thing, judging by the thousands who thronged Union Street in particular, most of whom were apparently brimfull of enthusiasm, and a "weedrap" besides.—G. J. B.

VARIETIES.

THE Reading Show of Pigeons and cage birds is fixed for the 28th and 29th inst. The classification is, as usual, extremely good, and, what is more, the staff of Judges appointed is large—no less than six for Pigeons. This we consider of the greatest importance. It is of little use to collect a magnificent show of birds and then so to overtax the Judges that they cannot possibly do justice to them. Capt. Norman Hill's challenge vase for Pouters will be competed for at this Show.

AMATEUR judging seems popular; for the Cambridge Show this week, at which it had been announced that an amateur (Mr. O. E. Cresswell) would judge, although there were certain restrictions to the entries in some classes, no less than 400 pens of poultry and 850 of Pigeons were entered. This number being quite beyond the powers of one Judge to take satisfactorily a second was appointed, and Mr. T. C. Burnell made the awards in the Pigeon classes.

WE have lately been writing on the mating of poultry for breeding; it is now of the utmost importance to keep the breeding birds in good health and condition. After a short spell of milder weather the cold seems inclined to return, and this has a bad and depressing effect upon the birds, especially the cocks; their allowance of food must be increased, and a little meat or Spratt's food may be given with advantage. Many people seem to think that an egg is an egg, and that if so many are laid a certain number of chickens must inevitably follow. Unless the breeding stock are now kept healthy and vigorous a large portion of the eggs will be clear, or the vital germ in them so weak as to fail in an early stage of its development.

AT the Peristeric Society's Show of Fancy Pigeons held this week at the Crystal Palace, many birds of great value and beauty were on view. The exhibits numbered five hundred. Mr. Hedley, President of the Society, contributed handsome Carriers to a particularly strong show of this favourite bird. Mr. Square of Plymouth, Mr. Maynard, and Mr. Heritage were friendly competitors with the President for Carriers' honours. Antwerps were well represented by Mr. Howard, Mr. Tegetmeier, and other exhibitors. Mr. Waterhouse showed a pen of large mealy birds. With Turbits and Owls Mr. Esquiant, Mr. P. H. Jones, and Mr. Schweitzer were well to the front. Mr. Maynard exhibited charming Fantails. One of Mr. Heritage's yellow Jacobins, Mr. Hedley's Barbs, Mr. Combe's and Captain Hill's Pouters, which were to the fore in their classes; and Mr. Poland's white Carriers attracted much attention. Mr. Pratt also exhibited Carriers. In the several varieties of Tumblers Mr. Inman, Mr. Jayne, Mr. Dupree, and Mr. P. H. Jones were some of the principal exhibitors. A pair of Runts, the only specimens of a Pigeon bred principally for weight, were sent by Mr. Price. Dragons were shown by Mr. Leith, Dr. Dwelly, Mr. Howard, and Mr. Whitehead; and Turbitens and other toy birds, were exhibited by Mr. Waterhouse and Mr. Neef.

WE hear on all sides of more and more incubators being started. If our readers will only send us accurate analyses of their experiences with them we may be able to arrive at some useful conclusions. We are quite impartial in the matter, and have no predilection in favour of any machine, but simply wish to learn the experience of those who tabulate it accurately.

IT is amusing to see how rapidly in these days a supply of any breed of birds follows when once interest has been excited in it. A few weeks ago a letter appeared in a contemporary about a French breed of Ducks called "Duclair." Already we see them advertised as a coming flight.

A CORRESPONDENT ("H.") desires to know if any of our readers have tried the new method of driving bees by electricity that he has read about from time to time; if so, he would be glad to know how it is applied, by what machine, and if it is likely to hurt the brood.

COTTAGE BEE-KEEPING.—No. 2.

BEFORE we give any advice to cottagers respecting improvements in bee-keeping it is well to understand what it is we desire to improve. Wherever I travel about in the south and midland counties of England I see but little variation in the manner in which our cottagers keep or manage their bees. There is the same utter neglect of them for the greater part of the year. Only about April or at the beginning of May do we find attention given to the circumstances or wants of the honey-gatherer. If the insects are seen "playing out" in March and April, all is considered to be going on well. Hives are prepared against swarming time. As the population increases a look-out is kept,

especially if the bees, inconvenienced for want of room, hang about the entrance, as they will do sometimes for weeks in great masses. Sooner or later the swarm may issue, and if somebody happens to be aware of the fact a considerable disturbance of the household occurs. Sometimes the swarm is hived as soon as it has "pitched" or settled itself, but very often a cloth is thrown over it and the hiving takes place on the evening; generally, also, the hive used is much too small for any profitable management. The new swarm so hived is then placed on a fresh stand, a bit of old rag or matting or a hackle of straw is thrown over it, and it is left to shift for itself. The same process occurs during the course of the summer, whenever a swarm or cast occurs; and a pretty large collection of hives may be seen in a row in many a cottage garden at the close of summer, indicating a considerable activity on the part of the egg-laying queens, although too often sadly checked by the want of breeding space in the too small hive, and giving a show of prosperity which, however, is far from realised when the autumn honey harvest is gathered in; for the multiplication of swarms and casts, which has been allowed full scope, has merely weakened the honey-gathering power of the apiary, and so at "taking up" time the result is often almost nil. Of the eight or ten hives to which the original two which survived the winter have grown, it may be that one or two—the prime swarms—are in fair condition; the rest are either heavy with old comb and bee bread, but empty of honey and feeble in bees owing to the excessive swarming which has continued unchecked, or else they are only half full of new combs and young brood. Then comes the old-repeated process of reserving for next year's stock the prime swarms, if they happened fortunately to have been secured, otherwise the old stock being the heaviest (but hardly the richest) are kept, and all else are taken up and plundered. Usually the harvest of honey which now takes place averages barely from 5 lbs. to 10 lbs., with a little comb to melt down; and simultaneously a general massacre of the plundered bees takes place over the brimstone pit. The two or three reserved stocks with their backs to a hedge or wall are then left to shift for themselves. Sometimes towards winter a dribble of sugar syrup is inserted into the hive entrance by means of an elder trough, an ounce at a time, which often does more harm than good, and certainly rather weakens than strengthens the hive. How any stocks survive the storms and rains or snows of winter and spring is surprising.

Such, then, is a picture of cottage bee-keeping in England at the present day, differing in no respect from what I can recollect of it fifty years ago—probably exactly what it was five hundred years ago. Nearly everything in this mode of bee management is vicious. If any ingenious plan could be devised which should endeavour to transgress the law of nature and to baffle the aims of one who desired success in all that a bee-keeper is presumed to wish for, you have it here devised and carried out by Hodge & Co.

Now just as a tutor who has had committed to his care an ill-taught youth sets himself first of all to uproot the bad teaching which his pupil has received, in like manner the teacher of correct bee management must endeavour to get rid of what is foolish and mischievous in the habits of his apiarian scholars.

Let me begin, then, by giving a few cautionary rules with this object in view. They will assume a negative form, teaching first of all what is to be carefully avoided.

- 1, Do not use small hives. None smaller than such as would hold at least a bushel or a bushel and a half of wheat should be admitted into the apiary.
- 2, Do not employ a hive which is not very strongly made, whether it be of straw or of wood.
- 3, Do not have any which are not flat-topped, with a large round hole in the middle for supering or feeding properly.
- 4, Do not buy nor accept the gift of a stock which is not strong in population and well stored with food.
- 5, Never place a swarm on a new stand; always place it in the old hive's position. Move the old hive, not the swarm.
- 6, Never keep a second swarm, unless you can join it to another. Weak stocks are only disappointing.
- 7, Never put your hives against a wall or with their backs close to a hedge.
- 8, Do not allow damp to get at your hives by neglecting to cover them properly.
- 9, Do not kill your bees at any time. Wise bee-keepers know far better than that.
- 10, Do not let them have too small an entrance-hole: better it should be too big than too small.
- 11, Do not neglect to feed them liberally in the mid-autumn, if they happen to want a supply; sometimes also in the spring.
- 12, Never allow your bees to hang outside the hive in summer time. Their doing so simply tells you to enlarge their hive room.
- 13, Do not fail to examine your hives often during the winter as well as in spring and summer, so as to put to rights anything that may be amiss.

Here are thirteen golden rules which alone should help the bee-keeper to a better management of his bees. Each indicates a danger to be avoided. I daresay more might be added, but these

WEEKLY CALENDAR.

Day of Month	Day of Week	JANUARY 22—28, 1880.	Average Temperature near London.			Sun Rises.	Sun Sets.	Moon Rises.	Moon Sets.	Moon's Age.	Clock before Sun.	Day of Year.
			Day.	Night.	Mean.							
22	TH	Royal Society at 8.30 P.M.	43.1	32.3	37.7	7 55	4 28	11 58	4 13	11	11 48	22
23	F	Quekett Microscopical Society at 8.30 P.M.	42.6	32.4	37.5	7 54	4 30	10 40	5 10	12	12 1	23
24	S	Royal Botanic Society at 8.45 P.M.	43.1	32.1	37.6	7 53	4 32	1 36	5 59	13	12 16	24
25	SUN	SEPTUAGESIMA.	43.4	32.3	37.9	7 51	4 34	2 40	6 38	14	12 30	25
26	M		44.5	32.3	38.9	7 50	4 35	3 51	7 10	15	12 44	26
27	TU	Stephen Switzer born, 1682.	44.6	31.3	37.9	7 49	4 37	5 6	7 35	16	12 56	27
28	W	Society of Arts at 8 P.M. Lecture by Mr. W. Paul.	45.8	30.8	38.3	7 47	4 39	6 21	7 55	17	13 8	28

From observations taken near London during forty-three years, the average day temperature of the week is 44.0°; and its night temperature 31.9°.

NOTES ON POTTING.

THE season of the year is fast approaching when the potting of many plants will need attention, and no time is more convenient than the present for giving notes upon such an important subject. Houses may be properly constructed for plant-growing, suitable soil may be selected, and proper temperatures maintained; yet of what avail are these if the operation of potting is not carried out in direct accordance with the requirements of different plants? Too many about to engage in this general potting neither employ forethought nor exercise discretion in the matter, and start at one end, or at one house, and push on rapidly to get it over. This should never be the case where after success is desired.

Early preparation must be made before the potting time, and the late severe weather has afforded a good opportunity to forward such work as much as possible. The different soils should be under cover for some time previous to being used. Many never do this, and the soil is then in an unsatisfactory state, perhaps saturated with wet, and when used in this condition plants seldom start freely into growth. Potting had much better be delayed for a time until the soil is in a fit state to be used than to employ it in an unfit state. Again, it is often used from a cold shed or outhouse for the occupants of close warm houses, with the idea that it will quickly become warm in the pots. Such may be the case, and while it is being warmed the plants are being seriously checked. Soil should be placed where it will become of the same temperature as the house from which the plants are to be potted. This is best done when it is broken or chopped as is needed; the former by far the best mode, then worms can be picked out as the operation proceeds. Peat can also be broken up, care being necessary to remove all pieces of woody roots, or the strong roots of ferns, which frequently exist in quantity. If these are amongst the compost employed in potting much trouble and annoyance may be occasioned afterwards, as such roots are liable to produce fungus, which is difficult to eradicate when thoroughly established in the balls of hardwooded plants; indeed in many cases the plants are rendered worthless.

Where any thoroughly decomposed manure is used in potting it should have been stored last summer or early autumn, preferably the former, as it is a long time before it is in a proper condition for use. Sphagnum moss that may be required for the potting and top-dressing of Orchids should be carefully picked over, and a sharp watch kept for slugs. In picking it should be selected, and the best kept for the surface. It is well, if time can be spared, to sort out a quantity of the best green ends for the top of the pots, which will soon commence growing, and Orchids generally appear to thrive much better when the moss is growing freely than when it is dead on the surface. The best means of warming the soil is to place a quantity of the different kinds required in shallow boxes, and place them under the stages or on the heated pipes; it will soon be ready for use.

Other work can also have been pushed forward, such as washing pots and potsherds. It is important that the pots used be clean, not only for the sake of the plants turning out better when required, but because plants grow much better in clean pots. The excuses made for the use of dirty pots are in no measure entertained by us, and we can see no occasion for the use of them in either large or small gardens. If washed as they are emptied very little labour is incurred. This work can be done on wet days or during the winter season, mornings and evenings, when not sufficiently light to do other work. If pots are washed as soon as emptied they do not take half the labour as if stored away and the soil and dirt allowed to dry upon them. Equally important is the washing of crocks for all delicate plants, and as all plants love good drainage and dislike the soil to become stagnant about their roots it should be generally practised. Yet this matter receives but little attention in the majority of gardens. When dirty crocks are used they hold the small particles of soil that may be washed down by constant watering, and help to choke the drainage. The refuse that comes out of the sphagnum moss when picked should not be thrown away, and the old moss from the Orchids that are repotted or top-dressed should also be saved to place over the crocks.

We will now refer to the general potting alluded to, and advance one or two examples. We do not believe in the system of starting in a house and potting all the plants before leaving it. In the majority of cases they are not all ready, and it is unwise to repot them before root-action has commenced. Some will be resting and require a longer rest than others, while it is the nature of others to start into growth early. If we look into an Orchid house we shall find *Odontoglossums*, *Saccolabiums*, *Vandas*, *Aërides*, some of the *Miltonias*, and *Oncidiums* will be amongst the first to require attention, while others will need potting at a later period. *Phajus*, for instance, will just be showing their flower spikes, and the young growths will be some time yet before they appear. Then, what advantage would it be to pot them with others that start into growth earlier? Let us look into the stove, and there we find some plants that completed their growth late which will not be ready for some time. Some of the young stock required to be grown on can be prepared for a good start. *Gardenias* are amongst the first that can be operated upon in the stove, not unfrequently they are left to the last. By careful examination it will be found they commence producing roots with the few new leaves they unfold before the flower buds are really visible. It is much better to repot them that require it when in the above condition than to defer the work until after blooming. The roots will take a firm hold of the new soil, and if small shifts are given in some cases the roots will reach the sides of the pots before the plants have finished blooming. They should then have their necessary pruning, after which they will start into growth freely and vigorously. The roots should not be disturbed much in potting, or the flowers may be impaired. The same system should also be maintained in the greenhouse. The young stock of *Heaths* that have not been kept in too low a temperature through the winter will have commenced

growth and can be potted at once, while those of the soft-wooded type that are blooming, and Epacris that require cutting-back, will not be ready for some weeks. The same may be said of Azaleas. The earliest will first need attention, and so on until the general stock is gone through, in accordance with the nature and requirements of different plants, not forgetting those that are subjected to forcing or retarding, which should also be taken into consideration.

Amongst other essential points to be mentioned is how the work of potting should be carried out, its advantages on the one hand and the evils resulting from it on the other. A warm potting shed is essential, or, better still, a small glass shed attached to the house in which the plants are grown; they are then not exposed to the cold in being conveyed to the potting shed. These little sheds are invaluable for other purposes besides potting. While the external atmosphere is cold we pot all our stove plants in the houses in which they are grown. Potting is advantageous and necessary to plants and fruit trees grown in pots, both of them succeeding very well for a time in the same pot with liberal feeding and rich top-dressing; but potting must be ultimately resorted to in order to supply the roots with fresh material. Young plants required to be grown into specimens or to a certain size before flowering should not suffer through having their root space limited, otherwise their progress is not satisfactory; therefore potting in various stages is one of the principal items of a gardener's duty, and when a systematic routine is adopted the plants flourish satisfactorily. When subjected to careless potting by breaking the old ball where unnecessary, or curling the roots into a heap to get them into the pots, or crushing them one upon another without a portion of soil intermixed with them, bad results can only be expected.

We would forcibly urge the importance of not using pointed sticks in liberating the roots of hardwoods as well as many tender-rooted evergreen stove plants. This is held out by many to be most important and is largely practised. It is one of the greatest evils in potting that can be imagined, and more plants are ruined annually by it than from any other cause. Another great evil and one that should be guarded against is loose potting, especially with those plants that require the soil to be firm, which should gradually slope to the collar to prevent the water passing through the new soil and leaving the old ball dry. After potting the plants should be kept in a somewhat closer atmosphere until root-action has again commenced. The sides of the pots as they become dry should be well damped with the syringe, to save watering the plants for some days after potting, to give the roots a fair chance of healing from the damage received. No matter how carefully the operation is performed, it is almost impossible to accomplish it without some injury to the roots. If properly potted, and the ball being sufficiently moist at the time and the soil in good order, the latter will be sufficiently settled without the customary evil of watering, for some days at least.—W. BARDNEY.

ESTIMATES OF EARLY AUTUMN PEARS.

In giving my personal experience here of the relative value of Pears I wish it to be distinctly understood that I do not claim to speak for the county of Wilts nor for any section of it. In fact I can scarcely speak authoritatively for the adjoining village, for the reason that our kitchen garden is situated just where the rich heavy clay soil ends, while the village has a poor brashy soil with dirty green sand in many places under it. Close by, too, is Bidcombe Hill, formed of limestone, and the highest point in the county; and on the opposite side within a mile of us is the county of Somerset. I know of no place near here where Pears are well done, my experience therefore may be taken to be quite local and exceptional; and I imagine that any of your practical readers, did they give the same amount of thought to the subject, would be better qualified to give a report. Nevertheless, experiences which are limited and exceptional are not without their value, for by them it may be proved that there are some fruits which do well under very adverse circumstances, and others which certain exceptional conditions, extremely varied for different varieties, can only satisfy. Moreover, I wish to show that I do not mind exhibiting to the world my own ignorance of the subject in hand if I can thereby induce others to tell us what they know, be it ever so little. Let no one say to himself, "Everybody knows all this, and it is useless for me to think of writing." Depend upon it no one does know all about Pears, not even "our Doctor," and I venture to say that even he can pick

something worth making a note of out of the many valuable communications sent respecting the August Pears. Personally I feel indebted to all who sent their mite of information, but I cannot help feeling that such an important subject ought to have a wider response; and I hope, now that the aim of the Editors is clearly understood and that we are advancing to the more important and general season of Pears, a more liberal response will be forthcoming. I can bring some of your readers to mind who, I know, could give some information; and I hope they will not let the present invitation slip, for I take it to be nothing less than a national duty to attend to it, and "England expects that every man will do his duty."

Beurré d'Amanlis has all the qualities of a good Pear, being large and handsome, with good flavour and fine texture. For two or three years I had it remarkably good from a pyramid tree on the Quince, which grew freely and was not cut back hard. Suddenly this tree showed signs of canker, which increased at a marvellous rate, and the fruit has not been good since. On examining the base now I find the stem of the Pear 9 or 10 inches in diameter and protruding at least 3 inches all round beyond the Quince stock, which is 2½ or 3 inches below the surface soil. There are no Pear roots; the Quince roots appear healthy, but it seems to me that they are not sufficient to supply the large growth of the tree. This Pear here when healthy makes enormous growths—4 or 5 feet long in a good season, and I do not think any amount of pinching would restrain it and at the same time keep it healthy. I have some younger trees on the Pear stock, the long vigorous shoots of which are now finely studded with fruit buds.

Fondante d'Automne is more tractable; it does not grow so rampant, and it continues in good health on the Quince, on which stock I have two trees. Four others about the same age are on the Pear. These of course are much the largest trees, but the fruit is good alike from both stocks. The other two Pears lately figured in the Journal are not in my collection. Suffolk Thorn is a delicious little Pear which often ripens at the same time as Fondante d'Automne, and this season appears to have suited it very well, as, although late, it was up to its usual standard of excellence. The tree is very hardy, of moderate growth, and so far does equally well on Pear and Quince. All the trees mentioned are pyramids or bushes.—W. TAYLOR.

"WILLIAM PEARS! fine ripe Pears! four a penny!" shouted a coster as I entered the great sheep fair at Lewes on the 22nd of last September. I advert to the fact as an instance of this Pear only just ripening for once at the end of September in Sussex. In the south I regard this delicious old Pear as the connecting link between summer and autumn Pears, and therefore it should have a place in both.

Comte de Lamy also holds a legitimate place here. So highly do I regard it that had I to select one Pear it would have the preference, because, in addition to its delicious flavour, it is very hardy, of free stout growth, and quite young trees yield fruit abundantly. Fondante d'Automne holds quite as high a place in my estimation as regards quality of fruit and early bearing, but as I have only tried it upon a wall I cannot say if it is equally hardy. Its fruit comes in such huge clusters that thinning must be resorted to if fruit-sized fruit is required. It answers admirably here upon the free—i.e., Pear—stock on a west wall, and is a prime favourite. Madame Treve answers well both as a pyramid and cordan on Quince stocks. The pyramids make very stout free growth, somewhat thin and straggling, and do not afford much fruit till they acquire considerable size. The fruit is large, handsome, very juicy, sweet, and aromatic, usually ripening in September; but this season it is fully four months later. Of Beurré d'Amanlis I can only say the trees are vigorous, well set with blossom buds, and full of promise, but I have not yet had any fruit on them. Colmar d'Été is equally promising, and equally backward in fruiting. I look forward hopefully to next season, for what Dr. Hogg tells us in the "Fruit Manual" of its "honey sweetness, rich flavour, and noyeau aroma" quite sets one longing.

Flemish Beauty has fruited abundantly; the fruit, however, does not grow to its full size, but, like some of the Doyennes, its skin appears hard and unhealthy, but, unlike them, it is not given to crack. I feel tempted to continue, for there are so many delicious sorts ripening in October and November which must, I suppose, be regarded as late autumn Pears that the list of early autumn varieties seems a very brief one. When we come to the next section it will amply atone for this.—EDWARD LUCKHURST.

BEURRÉ D'AMANLIS is one of the very best Pears, coming into use usually at the close of September and continuing into October. Although it succeeds fairly as a pyramid on the Quince, the largest and best flavoured fruit is from trees on the Pear against a wall with a west aspect. The tree is a healthy grower and a free bearer, usually affording handsome dishes when other kinds fail; indeed, it comes in at a time when Pears are not over-plentiful, a sort of stopgap between the summer and autumn varieties, succeeding in our case Williams' Bon Chrétien. Flemish Beauty does not succeed as a pyramid on the Quince, and the tree, though it grows freely, is much subject to canker. It is not grown against a wall. Fondante d'Automne is not a free bearer in the open, but is good from a wall with a west aspect. Of all the September Pears that succeed as a standard none equal the Hesse, being hardy and a great bearer. It ripens at the end of September and keeps only a few days. Only this and Beurré d'Amanlis have succeeded in this locality (north Yorkshire), both affording serviceable fruit in the recent bad seasons when others have failed. —G. ABBEY.

I AM pleased to see this most important subject taken up by numerous correspondents, yet there are several counties which have not as yet been represented; but I hope they will come forward, as there are many who may contribute a small, but still it may be a very useful, mite of information.

The varieties figured in the Journal as representatives of early autumn or September Pears succeed well with us with the exception of Fondante de Cuerne, which is here worthless. One tree of it we have on a south-west wall, one on a north wall, and one on a north-east wall; we have it also as pyramids; it is on the Pear stock, and I intend giving it a trial on the Quince. The Flemish Beauty is beyond doubt the best September Pear suitable for the district. It succeeds here on walls, pyramids and standards; it is on the Quince, but like Williams' Bon Chrétien and a few others must be gathered before it is ripe. It is then rich and melting, but if left to ripen on the tree is mealy and worthless. Beurré de l'Assomption, although termed an August Pear, does not ripen with us until the middle of September. It is on the Quince both as pyramids and espaliers, but the flavour is not to be depended upon, especially in a wet season like the past. Beurré d'Amanlis is a good reliable Pear; it succeeds here on the Quince as espaliers, pyramids, and on walls, and appears to be suitable for any aspect, and when in good condition is delicious in quality and is a good bearer. Fondante d'Automne does remarkably well. It is a free grower and bearer, and in quality is everything that could be desired. In some districts it is an uncertain bearer, and the flavour is inferior, notably in the north of Lancashire, where it is comparatively worthless. Our collection of September Pears is rather limited. Our soil is a medium-textured loam inclining to light, with a sandy subsoil. I may add that most of our trees have had a good application of clay, which in dry hot summers has proved advantageous. I am not an advocate for hard pruning, but in preference to fighting with the top I prune the roots in cases of trees growing gross and coarse. —J. LLOYD JONES, *Cheeshire*.

SEPTEMBER PEARS, or Pears that are in use here in September or early in October, are the following:—Flemish Beauty on a wall having an east aspect is a good cropper, and produces large and beautiful fruit of good quality. The same Pear grown as espaliers is not so good. Autumn Bergamot on the same wall is a good cropper, and the fruit is of excellent quality; grown as pyramids or as espaliers it also bears well, but the fruit is not so large or fine as that grown on walls. Beurré d'Amanlis is an excellent Pear grown as a pyramid, the fruit being of good quality and the tree a fairly good bearer. Fondante d'Automne grown as espaliers is a fair cropper, and the fruit is of good quality; indeed it is an excellent Pear. None of our Pears are up to the usual standard of excellence this season, and all are much later in coming to maturity than usual. —DAVID LUMSDEN, *Bloxholm, Lincolnshire*.

THERE is not a large collection of Pears here. I have merely selected of some two dozen varieties for succession, formed in my taking charge here some six years ago, from previous experience amongst good collections, notably that at West-rook, Herts, the residence of the late Hon. G. D. Ryder, where he had 140 named varieties on the Pear book.

I heartily approve of the scheme that is being carried out by the *Journal of Horticulture*, as undoubtedly the correct

thing for the generality of places is a selection not a collection; it is, therefore, the more necessary to hear opinions from those who happen to be in the midst of the many good collections in the country. I well remember having it impressed upon me as a young man by the late Mr. Rose of Frogmore, to "see all the collections of fruits you can, but never form one." This, of course, applied only to the efficient supplying of an employer's table, and not where an employer or an amateur has the praiseworthy wish to form a collection for his own pleasure and the general information of the community. Without collections selections could not be made; the knowledge of what to avoid is as necessary as to know the good qualities of the best varieties.

I believe all early Pears to be equally as good from pyramids or espaliers as from walls, and should certainly advise keeping the walls for later sorts, which require all the heat of our finest summers and autumns, and more than we frequently have, to ripen them perfectly. My selection for August, September, and October would be Summer Doyenné and Jargonelle, which certainly is better in flavour and more lasting from an espalier than from a wall; Williams' Bon Chrétien, Louise Bonne of Jersey, and Marie Louise d'Uccle, as being earlier than Marie Louise, which with Doyenné de Comice would carry us into November.

This selection is from experience of the varieties named on different soils in different parts of the country, varying from heavy clay to a soil formed, as here, of the débris of a red conglomerate limestone, and may be depended upon for cultivation without the protection of a wall in most districts south of the Tweed if planted together either as espaliers or as rows of pyramids, so that tent-like protection may be afforded them, otherwise careful selection, preparation of stations, and judicious summer pruning produce disappointment, when frost in a single night destroys the labour of twelve months, and we have no fruit, or, if any, of so imperfect a character as to give little satisfaction, and to cause the judgment to be formed that such and such varieties are unsuited for anything but wall cultivation or the orchard house. —R. CROSSING, *Glamorganshire*.

ROSES AND THE FROST.

IT is assumed by a writer in last week's *Journal of Horticulture* that the Roses here are indifferently ripened and must be injured by frost. Let me assure him that neither of these inferences is correct. They are fairly ripened, more so than others which I have seen leafless; and they are not injured by frost. I am of opinion that the moist state of the ground throughout the spring, summer, and autumn of 1879 is a primary cause of their holding their leaves. But if this is taken as one fact, there are more facts which have to be put together on the other side. First, the growth here was not so gross as in many places; next, the frost was not so severe as in the midland and northern counties. The wood no doubt was capable of ripening to a point, when the leaves would have fallen and left the branches fully exposed. It is a question, then, of degrees rather than of fact. I hold that the leaves remaining on the plants proved more than an equivalent for the greater susceptibility of injury by frost through the very small shortcomings in the way of ripening. It is surprising what a small covering protects Roses from the effects of frost. I remember some standard Tea-scented Roses being laid in under an old Beech tree in the winter of 1887-8 passing through that terrible ordeal unscathed, when all those in the open quarters in the nurseries were killed. —WILLIAM PAUL, *Paul's Nurseries, Waltham Cross*.

[The ample foliage on the shoots sent, and the manner of its hanging down and covering almost every portion of the wood, must have afforded material protection to it. —EDS.]

STRAWBERRIES ON NORTH BORDERS.

IN reply to Mr. Luckhurst's query at page 21, as to whoever saw Strawberries growing on a north border, I would ask, What gardener of any ordinary experience has not seen them growing in that position? For my own part I cannot recollect any garden with which I have been acquainted the last twenty years but what had them growing in that position. Here we have quite a sixth part of our stock growing on a north border, from which we annually obtain good crops of useful fruit. At the same time we do not find it advisable to plant any of the more tender varieties in that position. The varieties we

grow are Vicomtesse Héricart de Thury, Keens' Seedling, President, Elton Pine, and Helena Gloede. The last-named variety is the best late Strawberry that I know. It is a good grower, a free fruiter, the fruit being firm in flesh and of a good flavour, its only drawback being its colour, which is a rather pale crimson; but I have no doubt it will improve in that respect in more sunny seasons. Some of the fruits weighed nearly 2 ozs. each during the past season. When more generally known I feel sure its merits will cause it to be extensively grown as a late Strawberry. I may mention that our stock came from Messrs. Veitch, and I have not seen it quoted in any other catalogue. President will not be planted again on north borders, as from the soft nature of its fruit it decayed very much before ripening during the last two wet seasons. We find it a grand variety on warm borders for early crops. As soils very much govern the success or failure of varieties of Strawberries I may mention that the soil here is a stiff loam about 2 feet in depth, resting on magnesian limestone.—H. J. CLAYTON, *Grimstone Park, Tadcaster.*

EUCALYPTUS GLOBULUS.

ABOUT this time last year we sowed a quantity of seed of this Gum Tree. The result was a good batch of young plants. Last May numbers of them were planted about the pleasure grounds here, the soil in nearly every instance being different. All were the same height at planting time. One planted in clay is 18 inches high, with no side branches. Another planted in a wet marshy place is 2 feet high, with no branches. Another planted amongst a quantity of gravel is 2½ feet high, with few branches. Another planted under the trees in similar soil is over 3 feet high. Two others planted in the centres of a bed of Pelargoniums and Roses in rich soil have grown nearly 7 feet high, and they are bushy in proportion.

This tree is said to be of very rapid growth, but this evidently depends very much on the character of the soil in which it is growing. How the frost has affected them cannot be rightly judged until spring.—J. MUIR, *Margam.*

GALVANISED WIRE.

I WAS pleased to read a correspondent's remarks on page 24 of the Journal on galvanised wire for fruit trees. I was just thinking of writing to ask a few questions and advice.

Last spring twelvemonth I built a Peach house and planted half a dozen Peaches and Nectarines, six as espaliers and six on the back wall. I used galvanised wire for the back as well as the front of the house. My trees grew vigorously and bore a few fruits the first summer. Last summer, although an unfavourable one, I had a few dozen fruits, the trees still looking healthy and flourishing; but I found almost on every branch where it crossed or was tied to the galvanised wire the wood was cankered and damaged, several branches almost as thick as my little finger are almost eaten through, and what to do I cannot tell. I have taken all the galvanised wire away and substituted copper wire instead, I hope with better effect.

I should like some of your readers to advise me what to do with the cankered part of the trees, as I fear when the sap begins to circulate the trees will suffer and the branches die. Is there any paste or application of any sort I could bind round the branches to prevent the exudation of the sap and save my trees?—CIVIS.

REFERRING to the communication from "C. P. L." in your last issue on galvanised iron wire, I desire to give my experience regarding the same. My viney was fitted two years ago with it, and I have found that leaves or young shoots merely touching the wire turned black after a short time at the point of contact. Tendrils also did the same, in some cases dying back to the shoot. I was at a loss to account for this blackening of the growths, which quite spoilt the appearance of my Vines, but at last became convinced it arose from the wires, and purpose having them painted this year. I shall be glad if any of your other correspondents can throw any further light on this subject.—W. A. BOIS.

PEAR ALEXANDRE BIVOET.—Some handsome fruit of this Pear from a cordon on the Quince stock trained to an east wall is just ripe, January 9th, and proves to be very good, sweet, very juicy, and with a pleasant flavour, but not much aroma. It should not, however, be forgotten that such a cold

gloomy summer and autumn as we had last year seriously affected both the size and flavour of all hardy fruit. It is described as "a first-rate dessert Pear" in the "Fruit Manual," which induces the hope that under more favourable conditions of weather the perfume with which it has been accredited will not be wanting.—E. L.

THE CLASSIFICATION AND PROPERTIES OF TULIPS.

SEEING that many readers are puzzled by the technicalities of Tulips, yet interested to know a little about the classification, points, and peculiarities of this most famous flower, I will briefly explain that our Tulip, which is a taller and later variety than any of the toy sorts so prettily played with in the garden game of bedding, has been classed by florists in three main divisions.

One class is termed Bizarres. These have yellow ground colours, and the marking is laid-on in black or red, and is many varying depths of brown. Another class goes by the name of Roses. Flowers in this have a pure white ground colour marked with rose, red, or scarlet. The third division consists also of white ground flowers, but the marking here is in some shade of purple, from lilac to almost black: these are termed Byblemens.

Each of these three classes is subdivided into two most important sections, depending upon the two recognised arrangements of the marking upon the ground colour. Either it is laid in beautiful styles of pencilling round the edge only of the petals, or else this pencilling is joined by bold beams of colour that rise like fireflashes up the petal-centre, and strike into the pencilling of the edge with their sharp tongues. A flower pencilled only is called a Feathered flower, and one that is beamed and pencilled is called a Flamed flower. The feathering must not break off anywhere round a petal edge, nor the flame be undecided, scratchy, or insufficient to strike to the feather.

The base of the flower must be pure yellow or white, as the case may be; and the stamens, upon which six bold black anthers stand, must be pure as the ground colour. Each flower is perfect at six petals and cannot be exhibited with more, though there are often blooms with seven or eight, and the shape is thus spoiled. Petals are to be broad, smooth on the edge, level on the top, and of fine polished surface and substance, so bending upwards from the base as to first form a good shoulder. The precise proportion for the cup of the flower has been a sorely vexed question. The practical solution is that we grow some rather long-cupped flowers, such as Queen of the North and Kate Connor, and also short-cupped flowers like Orion and Dr. Hardy, which last are of fine proportion in this respect.

In Tulips raised from seed a most curious fact is noticed: The young seedlings, which may begin to bloom the fourth year after sowing but more generally the fifth and sixth, will with very rare exceptions, all bloom self-coloured. At this stage they are selected for substance, shape, and purity—colour just now being of small moment, as only temporary. In this self-coloured state they are called Breeders, and season after season as they are grown now one and now another will "rectify" or "break," as it is termed, into feathered or flamed flowers, or some attempt at either. The classes they will belong to is a point decided by the base colour of the breeder, or by colour of base and petal considered together. If the base be yellow the flower is a bizarre, if white a rose or byblème. Roses break from a white base and pink, red, or scarlet body colours; byblèmes from a white base and body of lilac, violet, or purple. A seedling with lilac body and yellow base is worthless, for it will break into an inadmissible flower called a tricolor. It will have two ground colours—white and yellow, deriving its white through the byblème lilac of the breeder, and its yellow through its base as a bizarre. A red body and yellow base may be kept for the chance of a red bizarre; but as a rule, like the ugly duckling of the story—the young swan the plainer and weaker colours in the breeder flowers generally produce the richest in the rectified state.

It is additionally strange that the breeder or mother colour is not simply driven or collected into beautiful markings on the rectified petals, but that it disappears from the flower altogether, as a mist or veil lifted off. The base colour floods the whole flower with its pure white or yellow, and a new and marvellous colour strikes in to feather or flame the petals. A few bloom "rectified" from the first, and are then said to have

had no breeder. The separate bulbs of any one good seedling will some of them break feathered and some flamed, and others in neither one clear character nor another. Each bulb when broken transmits its own character to its every offset. This is the origin of "strains" in Tulips, for as each bulb leaves the breeder state it becomes the founder of a strain good or bad. Hence there is much in a strain as in a name in Tulips.

The breeders are a very lovely class of flowers. Among the roses especially there are the softest and most beautiful pinks and reds. There is nothing gaudy, rough, or rude about the florist Tulips; and though we like to break the breeders out, we value them very much in their light unfigured morning dress. When they will break and how to break them no one knows, or probably ever will know. Many coaxings and hardships have been tried upon them, and many an eccentric experiment made. Change of soil and locality seem to do something, perhaps more than anything, towards breaking breeders, but all seems mystery, and every result past anticipating. This all makes the work wonderfully speculative and interesting; and when it is seen how long is required to bloom a Tulip from seed, and have it rectified from the breeder in a good strain, the prices that have been paid for Tulips will seem less excessive.

Nearly all that compete at our National Show and elsewhere are English-bred seedlings. We have left the Dutch varieties far behind, and the appearance of fine new rectified seedlings at the National has now become a most marked and interesting feature of the show. Many of us are raisers; and our worthy President, Dr. Hardy, now rests upon his Tulip laurels with the honour of having raised, in his Talisman and Ajax, two champion flowers in their classes.

It will, of course, be seen that the rectifying of good new seedlings is the way to improved and distinct varieties. When a breeder rectifies it always adopts a shorter stature and more refined habit. Some varieties diminish very much in height when their breeders break. The foliage of the breeders is a rich dark green with a fine blue bloom on it on which you might write your name. It is less vigorous when the bulb rectifies, and shows, long before the bud colours, a mottling and streaking with lighter green—the habit of rectified Tulips, and a certain sign beforehand that breeders are broken.—F. D. HORNER, *Kirkby Malzeard, Ripon.*

EARLY PEAS.

No vegetable is more appreciated than early Peas, and I think a few remarks upon them will not be unacceptable. Most gardeners have their own mode of growing early Peas, and although my remarks are not new they may be of interest to some of your readers. Those who sow their early Peas in the open ground find it very difficult in seasons like the present to have them anything like satisfactory. My mode is to fill boxes with leaf soil pressed in firmly, sow the seeds thickly, and cover them with about half an inch of soil. Do not water the soil, as it will cause the seed to decay; place the boxes in a temperature of about 55°, and after the young plants appear through the soil place the boxes close to the glass. If the weather is favourable put the plants out the second week in February, and stake them at the same time. Place a few pieces of Spruce boughs on boards on the windy side to protect them until they become established. Laxton's William I. I have found to be the best early Pea. If the second batch of Peas is treated in the manner I have described they will come more satisfactorily, and the pods will be larger than if the seed were sown in drills. If the Peas are required for exhibition, pinch the growing point off after it has shown about eight pods, as then they will grow much finer.—SOUTHERN GROWER.

TREE AND PLANT LABELS.

THE advantages claimed for the "Acme" labels by Messrs. Stevens and Pinches, the manufacturers, are durability, distinctness, lightness, and neatness. Judging from the specimens before us we think their merits are not over-estimated. The labels are made of zinc, the letters being struck with a die, and are raised above the opaque surface. They not only are rendered conspicuous but are practically imperishable. They are suitable for plants in pots, fruit and other trees, shrubs, and Roses. The preservation of the names of various trees and plants is very important. In the case of plants grown under glass the names are seldom lost—certainly not nearly to the same extent as are those of fruit trees and Roses in the

open ground. As one way of preventing this, and we think probably the most effectual one, we suggest to nurserymen the desirability of employing labels of a durable character for attaching to trees when they send them to purchasers, in place of the perishable paper or textile strips on which the names



Fig. 9.

are usually written. Few purchasers of trees, we presume, would object to paying 1s. or 1s. 6d. a dozen (according to the



Fig. 10.

form of label preferred) extra for the trees for labels of thoroughly durable character. At any rate, we do not hesitate in saying they would be penny wise and pound foolish if they



Fig. 11.

did; but on the contrary we believe there are many who would be glad to have trees named in the manner indicated. To nurserymen readily prepared labels would be a convenience during the busy planting season, when much labour is necessarily incurred in writing the thousands of names that some firms have to accomplish in a few weeks. When trees are planted in private gardens work of various kinds urgently requires to be done, and very often the labelling of the trees in a thorough manner is deferred to a more convenient time.

When that time arrives the names sent with the trees are too frequently obliterated, to the great disappointment of the owners of the trees or the gardeners. Sometimes suitable labels are not at hand, and if they are the names are not always written in a clear legible manner.

The black portion of the samples we have received extends quite across the label, and has a much neater appearance than the crenated borders of those represented in the engraving. Any names of plants or fruits may be obtained in this form, but it is of great importance that they be correctly spelt; and we notice a few inaccuracies in the list of names accompanying the prospectus, particularly amongst Roses.

STOCKS FOR ROSES.

ON page 24 there is a letter from Mr. Frederick G. Oliver, in which he comments on the fact of the Rev. Canon Hole recommending the cultivated seedling Briar as the best stock for the Rose, whereas R. N. G. Baker, Esq., advises the use of the Manetti. Having tried both these stocks it may be of service to Mr. Oliver and others if I give my experience.

My garden (in Lancashire) is composed of a rather stiff soil, and I had about two hundred Rose trees on the Manetti; and after trying them for two or three years was not at all satisfied with the results, the blooms being small. I then purchased about fifty more trees on the seedling Briar, and had most excellent blooms, especially the first year; and so satisfied am I that this is the best stock on my soil that I now use nothing else, the blooms being as good as I could wish.

I believe really one stock is as good as the other, and that it is entirely a question of soil, as is proved by the following: Having a friend in Lincolnshire who is very fond of Roses, I made him a present of some thirty or forty of my three-year-old Manettis, which he planted just before the frost of 1878. Being down there last summer I called to see the result, and found them nearly all doing remarkably well, producing splendid blooms; and on La France I think were some of the finest blooms I ever saw, even including the National Rose Society's Show. I may add the soil in which they were growing is much lighter than mine, but a good rich loam. I should be glad to hear the opinions of any other of your correspondents on the above.—JOHN HOPPER.

PRECOCITY IN VEGETABLES AND PLANTS AS INFLUENCED BY THE MATURITY OF THE SEED.

MY object in calling attention to this matter was to show that the "early to bed early to rise" principle applies not only to plants in general, but that the seed of annuals and other vegetables is influenced by it, long practice and experience having convinced me that this is the case, and I feel assured that this is at least the modern view generally admitted and adopted by seed-growers. Although some years ago a few agriculturists were wont to believe that weak or light seed of cereals was advantageous for a crop, I have an impression that this notion is now pretty well exploded, as all who have had anything to do with plants understand that a weakly seed, from whatever cause the weakness arises, will produce a sickly and consumptive plant; and it was not the precocity of disease I had in view, but precocity combined with health produced by hastened and early maturation. Still maintaining this, I shall not take issue with your correspondent "SINGLE-HANDED" as to the result of his experiment with Pea Veitch's Perfection, nor with the authorities quoted by him, although for the purpose of obtaining an early crop I should not select late-ripened seed. From the seed used by your correspondent in his experiment I think I could have selected by the eye seed which would have produced the earliest yet healthy and sufficiently vigorous plants, also other seed (the bulk) which would have produced vigorous but later-maturing seed, and the remainder producing offspring subject to early and premature decline. This is certainly not, however, the precocity I had in view, but is that which must result from your correspondent's mode of selection.

His allusion to the practice in Norway and to the use of seeds from northern climes, instead of supporting his theory, I consider rather tends to favour my own, and is quite consonant with my practice; for I take it that the concentration of the light and heat which attends the short northern summers promotes rapid growth of the plant and quick ripening of the seed, and consequently fulfils the conditions requisite for producing precocity in the next generation; but this is a very

different matter to the use of seed from cold late land, as to the results to be obtained from which I must still remain at issue with your correspondent. I have not urged that the forcing of Seakale and Rhubarb, &c., is favourable to an early maturation of growth in autumn, but I hold that this is the case where moderate excitement only is resorted to. However, no one with any experience would maintain that the weakening of a plant by strong forcing, accompanied by the almost total exclusion of light, would assist autumn maturation; for, in fact, the first growth is destroyed and a second one usually occurs during the same season, which, being late and from an exhausted stock, is weak and the shoots unripe at the usual fall. It is hardly necessary to instance such plants as Strawberries, Roses, Pelargoniums, and Potatoes, which, as usually forced in different modes, illustrate also the "early to bed and early to rise" principle in plants.

"SINGLE-HANDED'S" remarks and caution as to the sowing of seeds this spring are *à propos*, as the ground is unusually cold from the diminished and almost continued absence of sunlight extending over many months; and even if good seed be used I anticipate that many failures will occur, and that where germination takes place the radicle will either perish or be injured, as was the case last season with many seeds, especially amongst Scarlet Runners and French Beans. Nothing, therefore, will be gained by early sowing, except in very warm situations. Last year in this locality Carrot, Beet, and Onion seed was in many cases sown twice, and then half crops only were obtained, and Cucumber seed, although in some instances sown three times, never germinated at all; but now with weak and imperfect seed on cold land it will be almost too much to expect a healthy plant or half a crop. The seed trade are therefore wise in frankly bringing the matter before their customers.—T. LAXTON, Bedford.

SCOLYMUS HISPANICUS.

I HAVE tested this plant as a companion to or substitute for Scorzonera, by sowing the seed both early and late, and I find that it has the great fault of Scorzonera—namely, running rapidly to flower and seed.

I have grown Salsafy for years with satisfaction, but I have always found such a strong tendency in Scorzonera to produce flowers instead of making useable roots, that I have entirely banished it from my kitchen garden. I fear Scolymus must be classed with it, for besides the above-named tendency it is unquestionably very tender, the roots being killed by a very slight frost. As regards its culinary qualities it is no improvement on what we already possess in Salsafy, which does not show an undue tendency to run to seed.—G. O. S.

SOWING VEGETABLE SEEDS IN 1880.

DURING the last month I have received a large number of seed lists, and in every one of them the same advice is repeated—to sow seeds thicker this year than usual. The inferior quality of many seeds is said to necessitate this, but I venture to think in many cases the advice if put into practice will be wrong.

No greater mistake occurs in our gardens annually than sowing seeds too thickly, and I am certain that the result would be much more satisfactory in many instances if half the seed sown did not germinate. In that case the result would only be a trifling loss of seed, whereas when the crop is too thick the young plants are crippled. Take Turnips for instance. See the thousands of plants which are thinned out of a row 50 yards long and thrown away. The same remarks apply to Carrots, Onions, Spinach, Parsnips, and I may say every vegetable. If we could sow all our seeds singly I am confident, from experience, that much better crops would be the result. As it is we can always practise thin sowing, and those who do not believe in the practice might try a row of two of different vegetables this season.

Instead of sowing seeds thicker than usual I would advise the opposite course. Some may sow the seed thickly and thin out the plants afterwards; but this is a waste of seed in the first place, and the remaining plants never have that hardy free-growing character which thinly grown plants have. In my opinion, crowding the plants when young does more harm than crowding when old. Do not sow the seed too early in cold wet ground.

Where means are at hand all early Cauliflower, Celery, Leeks, Brussels Sprouts, and Peas should be raised under pro-

tection. Do not sow seed for the main crop of Onions, Carrots, Parsnips, &c., too early. The seed will germinate better if sown in suitable soil at the end of March or the beginning of April than if sown in wet cold ground by the end of February. Under all circumstances it is a great advantage to cover the seeds with a little dry, light, rich soil. In bad seasons I draw the drills a little deeper than they are wanted for the seeds. A little fine dry soil is first strewn along the bottom; the seed is sown on this and covered with the same material, and I find this plan to answer admirably. Those who sow their seeds thinly need not fear the failure of a crop, providing their seeds have been procured from a trustworthy source and sown under good conditions.—A KITCHEN GARDENER.

IRISH YEW.

I THANK Mr. Cobb for his interesting statement on page 23 regarding the avenue of Yews at Berkhamstead. There is an Irish Yew in this neighbourhood, growing in the centre of Bellfield Garden, that is 19 feet 5 inches in height, 41 feet in circumference of its branches, and the girth of its stem at base is 4 feet 2 inches. It is, however, a small tree in comparison with the two great Irish Yews at Netherplace House, Mauchline, also in Ayrshire. "They may be called twin trees." They are each fully 30 feet high, and 100 feet in circumference of branches; girth at base 9 feet 7 inches. Nothing is known of their age or history.—DAVID LANDESBOROUGH, *Kilmarnock*.

NOTES AND GLEANINGS.

THE late severe weather has done much damage to **HOLLIES** near Liverpool. Their leaves are falling in numbers, and already the branches have scarcely a leaf left upon them. This is undoubtedly owing to the immature state of the growth when winter set in, the second growth being very late. After the severe weather of the winter of 1878-9 scarcely any injury followed to Hollies, but in the winter previous a great number of leaves fell in the month of February.

— It will be wise (writes Mr. Bardney of Norris Green), for those having **PEACHES** and **NECTARINES** in bloom just now not to trust merely to the shaking or tapping of the trellis, which we found quite sufficient during favourable sunny weather. We are using a small hair brush to spread the pollen with this year. The blooms are opening slowly and weakly.

— THE immense size of the pseudobulbs of **DENDROBIUM NOBILE** grown at Calderstones has been noticed on a previous occasion in the Journal. They have during the past year grown equally as large. We question if they will bloom as well owing to the unfavourable weather for ripening the growths, but some of the plants are showing flowers well.

— THE FROST commenced again with severity on Sunday last, and has continued up to the present time. In Messrs. Veitch's nursery at Chelsea the following temperatures were registered on 18th, 19th, and 20th inst.—viz., 18°, 25°, and 13°. At Croydon on the 19th and 20th the temperatures registered were 15° and 13° respectively.

— THE annual meeting and dinner of the **HORTICULTURAL CLUB** took place at the Club house on Tuesday last. It was announced that during the year a further sum had been invested in the funds, leaving also a balance in hand at the end of the year. Mr. John Lee was re-elected Chairman, and the names of Mr. George Paul and Mr. T. Francis Rivers added to the Committee. Much satisfaction was expressed at the excellent arrangements of the Club; and those present undertook to do what they could to still further increase its numbers, and thereby extend its usefulness.

— A PRACTICAL cultivator suggests to those about to make fresh plantations of **RASPBERRIES** the necessity of thoroughly trenching the ground and heavily manuring it before planting. After planting cut the canes down to within a foot of the ground. Better canes will be produced for next year's fruiting than if left their entire length.

— IN the Pine Apple Nursery, Maida Vale, we recently noticed a specimen of the pretty but rare little Orchid **GOMEZA RECURVA**. The flowers are small, of a creamy colour, very fragrant, suggesting the odour of Violets or Orris Root, and they are borne on a short arching spike. Two plants there have been in flower for a considerable time, and they are by no means past their best now. The species is a native of Brazil,

and Mr. O'Brien finds that the temperature of the **Odontoglossum** house suits it best.

— THE plants mentioned above, and also several others, are growing in the old dry pericarps or capsules of **LEYTHIA OLLARIA**, the Monkey-Pot-Tree of Brazil. This tree produces the Sapucaia nuts which are frequently seen in Covent Garden Market and the chief London fruiterers' shops. It is allied to the tree which bears the well known Brazil Nuts (*Bertholletia excelsa*). The capsules when ripe are very hard, and after the removal of the seeds and "lid" they form admirable flower pots, only unfortunately constant exposure to moisture induces decay.

— "A KITCHEN GARDENER" writes:—"I am very pleased to see that such a thoroughly good and practical gardener as your correspondent 'R. P. B.' (page 48), should agree with me respecting the **WINTER TREATMENT OF VINES**. I think the 'resting' of many plants is often carried to such an extremely unnatural extent as to be more injurious than beneficial. Severe winters may be taken as illustrative of extreme resting practice; but so far as I have been able to observe, every plant grows as freely and produces fruit as well after an exceptionally mild winter as the opposite."

— WE hear that a "**ROYAL SOUTH KENSINGTON NURSERY COMPANY**" is about to be established, of which Mr. John Willis is to be Manager, and Mr. James Richards of the Royal Albert Hall, Secretary.

— THE monthly meeting of the **LIVERPOOL HORTICULTURAL ASSOCIATION** was held on the 17th inst., when two interesting papers were read, the first by Enoch Harvey, Esq., on fertilisation. As might be expected by all who are acquainted with Mr. Harvey as a botanist and lover of horticulture, the subject was fully detailed in a very masterly manner. The second paper was read by the President Mr. Faulkner, his subject being a short history of British and exotic Ferns, with notes on their culture.

— A PAPER, by Mr. T. Meehan, ON THE FERTILISATION OF **YUCCA**, which was read before the American Association for the advancement of science at Saratoga, and subsequently appeared in the "**North American Entomologist**," has recently been issued in the form of a pamphlet. It contains a résumé of the facts that have been observed in reference to this subject, and Mr. Meehan states, as the result of his investigation, that while *Yucca filamentosa* is undoubtedly fertilised by the Yucca moth (*Pronuba yuccasella*), *Y. angustifolia* is not visited by that insect at all, and yet produces perfect seeds. It appears, however, necessary that it should be fertilised artificially or by insect aid.

— ACCORDING to the October number of the "**Journal of Forestry**" Paris has 82,200 trees in its streets, 8298 in its public parks and gardens, and 10,390 in its cemeteries.

— THE American "**Gardeners' Monthly**" for December contained a coloured plate of that valuable ornamental plant **VIBURNUM PLICATUM**, which Mr. Thomas Meehan states "is one of the hardiest and most easily grown plants, and probably there is not a spot in the American continent where it will not thrive." The first plants were received from England by Mr. A. Cope of Philadelphia, "in whose grounds plants have been blooming for the past fifteen years."

— "THE last year," says the *American Cultivator*, "was an 'off year' for Apples, and yet the receipts at the Boston market were quite heavy. For four months in 1878 they were as follows:—September, 12,615 barrels; October, 121,407 barrels; November, 103,425 barrels; December, 22,904 barrels. The total receipts for the year 1878 were 293,396 barrels. The receipts for September, 1879, were 23,846 barrels; and for October, 1879, 51,804 barrels. The shipments of Apples from this port to Liverpool and other foreign ports, between September 1st, 1878, and March 1st, 1879, were 231,398 barrels. More Apples are received during the month of October than during any other month of the year. So far this month the exports of Apples from Boston have been:—For the week ending October 9th, 1469 barrels; Oct. 16th, 3255 barrels; Oct. 23rd, 6944; Oct. 30th, 7692 barrels."

GROWERS OF MARKET PRODUCE.—As you have inserted the complaints of market gardeners, will you allow me to request all persons interested in the matter to communicate with me in order that a meeting of market gardeners may be called through the medium of the press, for the purpose of coming to

some arrangement, which will bring us into direct contact with the consumer, and enable us to get the profits which ought to go into the pocket of the producer? With this object, I invite every market gardener to address a few lines to me, simply stating his desire to assist in the formation of a Market Gardeners' Association. If this appeal is sufficiently answered I see no reason, unless something unforeseen occurs, why we should not be in working order before the spring produce comes in, and to a great extent independent of the delays and disappointments of Covent Garden.—UNITAS, *The Vineyard, Newport, Isle of Wight.*

HIBISCUSES.

I DO not think that the grand *Hibiscus rosa sinensis* with its varieties and *Hibiscus Collieri* are quite as much grown as their merits entitle them to be. Some of them are flowering here at present. In fact a bloom $5\frac{1}{2}$ inches in diameter and of the richest crimson hue, now on a table beside me, has induced me to write this note. Their only defect is the fugacious nature of the flowers, which last only a few days. These *Hibiscuses* may be propagated in a suitable temperature as readily as Laurels. They form handsome plants very quickly, and they flower very profusely, and for a great portion of the year if kept growing. The plants which are flowering at present were struck from cuttings late in the autumn of 1878. They are now in 7-inch pots, and are bushes 2 to 3 feet in height and as much through. They have been flowering at intervals throughout the summer and autumn, and buds are still opening.

Plants propagated in autumn should be struck early enough to form good roots before winter commences. Our plants are grown in 4-inch pots until spring, when they are shifted into those 7 inches in diameter, in which they remain for twelve months, as we do not require large plants. In spring a shift into 10-inch pots will be given, which will be sufficient for another year, when the plants may either be thrown away or cut back and grown on for another season. Those who wish to obtain large plants quickly should shift them at the end of August into 9-inch pots, and again in spring into those two sizes larger.

The soil we use is an ordinary light loam with a very liberal addition of dried cow dung rubbed down very fine. They are potted very firmly. Liquid manure is supplied frequently when the roots have filled the pots. In order to have well-formed plants they require pinching at about every fourth leaf, the first break being tied down sufficiently to make a framework for the future plant. Our plants are grown in the same house as the winter Cucumbers, ventilation being carefully attended to. Grown under these conditions they are highly satisfactory. The petals require to be secured with gum before sending the flowers a distance.—R. P. BROTHERSTON.

VINES BLEEDING: A UNIVERSAL STYPTIC.

BECAUSE Vines cannot be pruned so long as the fruit hangs, and for other reasons, they are often pruned so late that in many instances they bleed in spring and are thereby much weakened. That is very well known, and need not have been repeated unless a certain cure can be recommended. That, too, has been discovered; and those who use Thomson's styptic immediately they prune know that it is perfectly efficient—unless, of course, the Vines are already bleeding; then the flow washes it off and it cannot act. Those who do not use this styptic may save Vine sap by using instead common shellac varnish. Having used both Thomson's styptic and the shellac varnish I find they are similar in their action. In both cases the ingredients are simply gum resin of some kind and alcohol, the former dissolved in the latter. When rubbed into the cuts the alcohol evaporates, and the solid wax or shellac securely closes the vessels of the wounded Vines, and the sap is without fail safely imprisoned, to be utilised in due time.—SINGLE-HANDED.

HARDY PRIMULAS.

UNDER the heading of "Auriculas" and "Hardiness of *Primula japonica*" there are some interesting remarks on the above subject. The *Auricula* certainly is a hardy *Primula*, and no *Auricula* grower that I am aware of ever stated that it was not. This is an age of progress and of improvement in the culture of hardy *Primulas*, as of other plants that are under the care of the gardener. I was very much interested in

visiting gardens in Lancashire some eighteen months ago, to make the acquaintance of an *Auricula* grower of the olden time. His heart was in his garden, and his choice *Auriculas* were tended with loving care, but I could see at a glance that his system of culture much needed altering. A number of small plants in the centres of 7-inch pots would have been much better in 8-inch pots, and the wooden shutters placed over a hole in the ground might with advantage have been substituted by glass lights, but I refrained from telling him. The growers of fifty years ago cling to the customs of their youth, and do not readily adopt what they term "new-fangled notions." That their practice is wrong can be proved easily enough. However, the wooden-shutter period is nearly over; the custom still lingers in a few Lancashire villages, and it is almost a pity to disturb the hoary veterans who still practice it. The glass frames have also their advocates; indeed, *Auriculas* should be grown in them for three-quarters of the year, but they cannot be compared to a properly constructed *Auricula* house as a place in which to bloom the plants and show them off to the best advantage. Those who place their plants in an *Auricula* house must provide the structure with abundant ventilation, and the plants must be placed as close to the glass as may be convenient. We have the plants in a house, because they open their blooms better there and can be inspected when the weather does not permit examining them in frames. Damp combined with frost, or damp alone injures the plants. Frost does not hurt them in the least until the trusses appear in the spring, when the flowers would be injured by it if they were unprotected.

As to the hardiness of other species of *Primulas*, most of them, I think, will be quite safe in cold frames; out of doors it will depend upon the climate very much, and the state of the plants when severe frosts come. In London, or within a ten miles radius of Fleet Street, an impure atmosphere combined with wet and frost is certain death to many hardy plants besides *Primulas*. I grew *P. cortusoides* for several years in the same place quite in the open, but all the plants ultimately died. *P. japonica* is quite as hardy, but the plants die in winter if the leaves have been injured with red spider. This is a great pest to all the *Primula* family. I believe the Himalayan species of *Primula* are the most tender that we have, but *P. rosea* and *P. capitata* are probably quite as hardy as *P. denticulata*, and may safely be wintered under the same conditions.—J. DOUGLAS.

FRUIT-GROWING IN SHRUBBERIES.

SOME time ago at my suggestion a correspondent gave in the Journal a description of a method of planting fruit trees in shrubberies. I have persuaded a friend of mine who has lately built a new house in an exposed situation to carry out a similar plan. It is very much exposed to the north wind, and he has planted a belt of trees for shelter, arranged in the following manner:—First row on northern side, Spruce Fir and Austrian Pine alternately; second row, Laurels; third row, Laurels and fruit trees alternately; fourth, entirely fruit trees; fifth row, near the road to the house, fruit trees and shrubs alternately. The situation being exposed, and soil not very deep on limestone rock, some people would think fruit-tree planting a hopeless case under such circumstances; but I do not think so, with the necessary care and attention. The trees can be manured and more soil added to the roots where necessary. I have recommended only such fruit trees as are hardy and suitable to the situation. Apples—Keswick Codlin, Hawthornden, Lord Suffield, Transparent Codlin, King of the Pippins, Pearson's Plate, Worcester Pearmain, Wellington, Lemon Pippin, and other varieties which succeed well here; but he will not require many sorts, a large number of those which thrive well will answer better. The Pears are Beurré Capiaumont, Bergamotte Esperen, and other hardy varieties; and the Plums Victoria, Golden Drop, Orleans, Prince of Wales, and other good bearers. I hope the results of the planting will be satisfactory to the owner, and at some future time I may let your readers know how it answers.—AMATEUR, *Cirencester.*

ACACIA PLATYPTERA.

ACACIAS are generally, and deservedly, appreciated on account of the freedom with which they flower, and their few cultural requirements. Many species and varieties are grown, and it is easy by judicious selection to obtain a succession of flowers during at least five months in the year—viz., from December to April. The species represented in the annexed

engraving is one of the earliest to flower, and therefore merits the first attention. It is a native of the Swan River territory, whence it was introduced to this country about 1840, and first

flowered at Messrs. Lucombe and Pince's Nursery, Exeter. The great peculiarity of many Australian Acacias is the partial or entire absence of true leaves, and *A. platyptera* is a good



Fig. 12.—ACACIA PLATYPTERA.

example of the latter. The branches are flattened or winged and dark green, and perform the functions of ordinary leaves. These have a singular appearance; but as the small, round, bright yellow clusters of flowers are very freely produced on the younger branches, the plant is not only peculiar but

extremely bright and pretty, and adds considerably to the decoration of the conservatory or greenhouse during December and January.

It requires similar treatment to other Acacias—*i.e.*, a compost of loam, peat, and sand, and the temperature of an ordinary

greenhouse. Care must be exercised, however, to ensure good drainage, and whilst the plant is in flower liberal supplies of water are necessary. One quality it possesses of great value to the cultivator is the freedom with which comparatively small plants flower, a recommendation that many other *Acacias* are deficient in. Plants about 2 feet high in 32-size pots produce flowers in abundance. Cuttings strike readily if inserted in peat and sand under a bellglass in a warm frame.

Our engraving was prepared from a spray of a small plant that has been flowering for some weeks in the greenhouse at Kew, and it very fairly represents the general character of the species.

ROSES, BIRDS, PEACHES, AND NECTARINES.

I SEE no mischief as yet done to Roses. The snow is now (January 13th) 8 inches deep, and I hope it may help to protect them. They are well protected at their base by litter covered with soil 5 inches in depth. I do not think as yet the upper wood is greatly injured. If I find it has sustained much damage I shall cut the trees down to sound wood. Till the dry cutting winds of March arrive we cannot tell our liabilities. It was a laborious and expensive affair to protect 2500 plants, but it was worth doing. We have many Rose growers and winners of prizes, but I fear we have few Rose workers.

As regards birds I am sorry to see how lamentably they are decreased. They were too numerous before the frost, but now they are too few in number. The winter of 1878-79 made havoc among them, and as the summer was so wet I believe the eggs were addled and the young brood were drowned. Partridges were almost annihilated, and other larger birds, such as turkeys and geese, suffered proportionally. Usually at Christmas our village shop is crammed with turkeys and geese, but this year there was none!

As regards Peach and Nectarine trees they have plenty of good buds under glass, but out of doors I see but little prospect for 1880. Very few and weak fruit buds are formed. I shall severely root-prune the trees in the spring, as those out of doors are vigorous, and will, if the season is wet and sunless, run to fruitless twigs. Even under glass copings at Mr. Connors, Fifehead Neville, I see the wood is unripe and the fruit buds weak and unpromising. Let us hope we shall next summer have plenty of sun and our fruit well ripened. I had a good supply of the above fruit, but the late Peaches were not well flavoured. I began with Early Louise and ended with the Peach and Nectarine, Prince of Wales and Princess of Wales, November 10th. We are much indebted to the late Mr. Rivers for greatly lengthening our Peach and Nectarine season. In Nectarines the Orange and Pine Apple are good varieties. —W. F. RADCLIFFE, *Oxford Fitzpaine*.

REVIEW OF BOOK.

Hardy Florists' Flowers. By JAMES DOUGLAS, F.R.H.S.

EVERY agency that is calculated to promote the extended culture of hardy flowers has our sympathy. Believing that those flowers denominated "Florists' Flowers" might with great advantage be grown in all gardens to which they are adapted, we have endeavoured, not only in these columns, but by other means, to disseminate information relative to them; and the fact that the sale of our manual (published at a nominal price) entitled "Florists' Flowers for the Many" has reached nearly 28,000 copies (and the demand for it still increases) is ample proof that a widespread desire for knowledge on the subject on which it treats existed, and still exists; we looked forward, therefore, with pleasure to the appearance of the work on which Mr. Douglas has been so long engaged. This work is now before us.

The rumours that have been circulated for some months past (not, we are sure, with Mr. Douglas's authority) respecting this book, led us to expect an exhaustive work—one in which the subject was treated in a manner different from and superior to that in which previous writers had handled it. This is certainly not the case, and, what is more, the author does not, as he frankly states in the preface, appear to have aimed at producing a high-class standard work, but has sought only to submit plain instructions to amateurs. In this we think he has erred. His success as a cultivator and the position he has attained as an exhibitor, especially of Auriculas, Carnations and Picotees, and the extent of his writings on these and other flowers in almost all the horti-

cultural periodicals, must of necessity have led the gardening public to expect a work from him, as near as it was possible to produce it, finished and complete. Such a work we should have welcomed gladly, but no one competent to judge on the subject can candidly consider the small volume just issued from the press as even approaching that character. The work is very far from being "finished" from a literary point of view, even though it is only intended for "amateur." In diction it is very faulty, and it is by no means free from grammatical errors; while what may be described as the technical part of it is markedly incomplete. The history of the several plants is scarcely alluded to, nor is the origin of the varieties traced, as it might have been, in a concise and instructive manner that would have rendered the book more acceptable, and there are also omissions of a practical nature that we ought not to have to notice.

Having stated what the work is not, we will now state what it is. It is substantially an abridged reproduction of what has appeared in our own columns and that of our contemporaries. Almost every subject to which a chapter is devoted has been from time to time treated more fully by Mr. Douglas in this Journal than in the volume before us. That this is so the author has himself admitted, for not long ago in writing in our columns on Auriculas—the fullest and best chapter in his book—he observed, "I have already told all I know about them in these pages. The lists of varieties need not be altered yet, and the cultural directions are complete." In producing his book the author's object has been to reduce within small prescribed limits the substance of his voluminous writings. The work of condensation is really a great task, and is often onerous even to experienced journalists; there is, consequently, much excuse for a writer who necessarily has not had practice in work of this nature, but there is no excuse for many blemishes that mar the pages, for these might and would have been expunged had the aid of a competent person been obtained to revise them.

We quite admit the force of the Rev. F. D. Horner's remark in his admirably written introduction to the volume, that "on a signpost the wayfarer looks for nothing beyond a plain and legible direction, and would rightly consider high degrees of ornamentation thereupon as ludicrously out of place;" but we must observe that it is necessary the letters be in their right places, and that many signposts are none the worse for being well finished, and are often very much better for a coat of paint, which not only usually renders them neater in appearance, but, withal, more legible. "One trusts," continues Mr. Horner, "the mile-post with its brief and pointed guidance, as having been placed in its responsible position by those who knew and had carefully meted out the way. Like confidence may be reposed in one who has had the heart and time to grow skilled in the culture of the different flowers on which he treats." We repose the fullest confidence in Mr. Douglas's skill as a cultivator, and it is because we desire to see him produce a work worthy of himself that we cannot pass in silence what the author's best friends cannot but regard as faulty in the pages under notice; indeed Mr. Douglas cannot desire any such thing as a glossing over of errors or inaccuracies, such a practice being repugnant to all sensible men.

Chapters are devoted to Auriculas, Carnations and Picotees, Tulips, Chrysanthemums, Dahlias, Hollyhocks, Gladioli, Polyantheses, Ranunculuses, Phloxes, Pentstemons, Antirrhinums, Pansies, Pinks, and Aquilegias in the order named. Anemones and Roses are generally considered hardy florists' flowers, but want of space probably prevented their being included; and Delphiniums, Irises, and Pyrethrums have certainly as much claim to be included in the category of florists' flowers as Aquilegias, and are equally worthy of notice. Without referring further to what is not included in the volume we will as briefly as possible glance at the chapters seriatim. That on Auriculas is in substance an excellent one—sound and good throughout, and a safe guide for all essaying the culture of these beautiful flowers; we observe, however, there is no allusion to the new race of laced Alpines raised by Mr. Dean, some of which have been certificated by the Royal Horticultural Society, and are distinct and promising. Carnations and Picotees are also honoured with a lengthy, but not a complete, chapter. Considering the work is intended for amateurs a strange omission occurs—namely, no mention whatever of the compost in which the plants should be potted for producing fine flowers. Again, in regard to exhibiting, which in the case of Auriculas is fully treated on, no mention is made of dressing Carnations. When we remember how forcibly Mr. Douglas has defended the practice of dress-

ing the flowers, and has shown that for exhibition purposes it is imperative that they be dressed, the omission is the more remarkable. We know also that many hundreds of flowers are dressed annually by cultivators without any thought of exhibiting them; indeed, "dressing" is a phase of culture to which the majority of florists attach great importance; nor is anything said about carding and other matters connected with exhibiting the flowers. Mr. Turner's new yellow ground Picotees are well described and spoken of, and they deserve all that is said about them.

A short practical chapter is devoted to Tulips, with which is incorporated a descriptive list of the best varieties by their great patron and successful cultivator, Mr. Samuel Barlow; and here we must observe that although a bed of Tulips is represented according to their classification not a word of explanation is given of the technical terms "Bizarres," "Roses," and "Bybloemens." As only comparatively few gardeners and amateurs are acquainted with the full meaning of these terms we reproduce (in another column) for their information some graphically written explanatory notes that were incorporated with a report of one of the National Tulip Society's shows that Mr. Horner contributed to this Journal a few years ago, and which demand more prominence than is there accorded them. Chrysanthemums follow the Tulips; a small chapter that will not satisfy all the fanciers of this popular autumn flower. Some space is devoted to a stand of blooms from Liverpool, exhibited at the Westminster Aquarium in 1878. "As fine blooms as have ever been grown, but the exhibitor threw away all his chances of success by not dressing the flowers;" yet not a word is said as to what constitutes dressing, nor how the dressing of these flowers should be done. We fully agree with the author in his remarks on exhibiting Chrysanthemums. It is highly desirable that separate classes be formed for dwarf-trained and more naturally grown specimens. The excessive flattening of the plants by severely twisting their stems is properly rebuked, and the plan where possible of showing the blooms so as to display the foliage of the plants is advocated. The genus is divided into seven sections, but while incurved varieties have two sections, which are scarcely necessary, the distinct reflexed type have not a section at all. This is clearly an oversight, and it would have been well had some attention been given to what are termed hybrid flowers, of which such varieties as the highly coloured Julie Lagravère and the rich and fragrant Progne are examples, for than this type of flowers none are more valuable for decorative purposes. The chapter on Dahlias contains a mistake at the commencement. D. "Mirabilis" is named as "the reputed parent of the fine garden varieties now cultivated." By this we presume D. variabilis is the species referred to. We do not know the other. The native country of the Dahlia, too, ought to have been stated, for as the matter now stands casual readers might infer that it is indigenous to Spain, Madrid being mentioned but not Mexico, where it was first discovered. The lists of varieties would have been more useful to purchasers had they been divided into selections of twelve, twenty-four, and other given numbers. The pretty section of single Dahlias is referred to approvingly.

The Hollyhock chapter calls for little comment. The useful method of root-grafting, however, is not included in it; and the double reference to the fungus *Puccinia malvacearum* was not required. The author's experience with *Gladioli* does not encourage him to speak favourably of them; but useful hints are supplied on raising seedlings. There is a conflict between the letterpress and illustrations in the chapter on *Polyanthuses*. Immediately below the sentence, "the 'petals' should not cut into the eye," are three representative pips in which the segments of the corolla are shown as cutting quite into the eye, in one instance down to the mouth of the tube. *Primroses* are not included in the chapter, although Mr. Douglas has strongly urged their claims to the attention of florists in our columns. *Ranunculuses* have a short notice; *Phloxes* a more lengthy one, the author having treated the subject as well and as fully as he has done in different articles in our own pages. *Pentstemons* are worthy of the chapter devoted to them, but they are not, as is stated, "hardy," certainly not in the majority of gardens, but have to be increased by cuttings inserted annually and wintered under glass. They well deserve this care, and should be more extensively cultivated. *Antirrhinums*, *Pansies*, and *Pinks* have the attention they merit, and the last chapter is devoted to *Aquilegias*, and very attractive some of them are, especially

A. chrysantha and the Loxford Hall hybrids which have been figured and fully described by Mr. Douglas in the pages of this Journal.

In this cursory review of the chapters we have not referred to the mode of cultivation recommended, and we now say it is sound and reliable. The lists of varieties are also good; indeed for the practical part of the book, subject to the few omissions noticed, we have nothing but praise to offer. It is in that respect a good book, but the writing of some of the chapters appears to have been hurriedly done, and the revision has certainly been inefficiently performed. We have no alternative but to adduce proof of the correctness of this statement, and in doing so we shall not by any means exhaust the list of errors that are so apparent.

The majority of the grammatical inaccuracies are due to the careless use of the personal pronoun "they," which in many instances may be understood to apply to very different nouns from what the author intended. For example, under the *Chrysanthemums* (page 58) there are some instructions respecting fumigating, concluding with the remark, "they can be destroyed by dusting with tobacco powder," which taken literally applies to the plants. Again, we read on page 99 that *Polyanthus* "plants should be placed in a frame with their backs to the south" a new way we presume of telling us the frame should slope to the north.

Another peculiarity that is very noticeable is the great attention bestowed upon flower pots. Instances of this are very numerous. Thus we are told on page 72 that "pots should never become dry," on page 106 "to supply the pots with sufficient water," on page 134 "not to give the pots water in frosty weather," and on page 164 that "pots require some looking after during the winter." In all these cases we might think that plants were intended, but for the injunction on page 38 "to keep the pots well supplied with water at the roots," an observation of startling novelty. These are only a few of the inaccuracies that are scattered through the pages, while even on the title-page of the book the name of the author's employer, F. Whitbourn, Esq., is incorrectly spelled, the "o" being omitted.

We now come to what is unquestionably the best part of the book—the monthly calendar of operations. This is commendably plain and concisely written. It contains instruction reasonable, sound, and useful. The substance of the notes has appeared in our columns, and subsequently in other journals; and it is very convenient to have them collected in a volume. It is also right to observe that some omissions in the foregoing chapters are included in this portion of the pages, but not all. This calendar proves that the author, due regard being exercised in revision, can produce a work of a standard character than which no one would be better pleased to see accomplished than ourselves. Many books of late have been published on gardening subjects that have been lamentably faulty, and for the credit of horticultural literature generally it becomes a duty to point out the necessity of literary accuracy in every work that is issued from the press.

We may add that "Hardy Florists' Flowers" contains an excellent likeness of the renowned florist, Mr. Charles Turner, which many lovers of flowers will be glad to possess. The book is well printed on excellent paper, contains a few illustrations, and forms a neat volume. We hope it will be shortly out of print, and that a new edition, which we feel sure will be enlarged and much improved, will be called for.

NOTES ON VILLA AND SUBURBAN GARDENING

PYRAMID AND STANDARD FRUIT TREES.—The former method of training fruit trees appears to find great favour with the owners of small gardens, but in very few instances indeed are they to be seen in a creditable condition. In some cases where the soil is rich and strong they grow much too freely, and unless proper remedies are applied produce but little fruit. According to our experience a state of affairs quite the opposite of this prevails in the majority of gardens, the trees presenting a stunted and starved appearance, annually producing abundance of weak blooms too often followed by a poor crop of comparatively worthless fruit. Of the two extremes the latter is the worse, stunted trees being the most difficult to get into a healthy state. It is a simple matter to induce a vigorous tree to produce fruit, all that is necessary being to cease hard pruning or shortening back, and to lightly root-prune. To invigorate stunted trees which are usually on light soils it is advisable to carefully remove a quantity of the soil from about the roots, and to fill up with fresh loam if obtainable, and failing this any clayey soil with an addition of good manure in each case, and the surface to be well mulched with

fresh manure. Amateurs in the majority of cases labour under a disadvantage with regard to soils, but in this instance they may with benefit exchange some of the soil from around the roots of the fruit trees with that taken from the flower garden.

Amateur as well as professional gardeners will do well to carefully study the remarks by Mr. W. Taylor "Against Hard Pruning," recently published in this Journal. When buying fruit trees it is as a rule a mistake to select those trees bristling with fruit buds; far better will it be to purchase healthy young trees, which will not only grow freely after replanting, but if properly treated will eventually produce heavy and superior crops. Never think of taking a crop the first season after planting, and but a very few fruit the next. This remark applies to all kinds of fruit trees and Vines, and cannot be too often impressed on the minds of amateurs. It is a mistake to buy and plant at haphazard, local surroundings must be considered. If the garden is small and the soil strong select Pears on the Quince stock and Apples on the Paradise stock, but if the soil be light then give the preference to the Pear and Crab stocks respectively. When pruning these trees and other newly-planted trees (not at the time of planting, but before they commence active growth), whether standard or pyramids, the first winter they should be cut back to near where last pruned in order to secure sufficient strong growth to form the tree, and this must be repeated the next season if necessary, especially if the growth is weak. After this the less pruning beyond thinning out where at all crowded the better. Crowding is very reprehensible, as it renders the inside of the tree useless. The leading and unpruned branches of the Pear as they extend will assume an upward tendency, but the Apple is more spreading in habit, and will require to be shortened-in occasionally. Where miniature pyramids are wanted they must be cut back and root-pruned if too luxuriant. Those who may have a paddock will do well to plant a few standard Apples and Pears about it, which in a few years may prove a source of much profit and pleasure, as well as giving the vegetable garden a much better chance.

These remarks would seem more acceptable earlier in the season, but it is not yet too late to plant. Much of it is being done now in various districts. In another part of this journal a discussion on Pears ought to be of service to amateurs; at the same time for the immediate service of some I append a list of six profitable varieties of Pears and the same number of Apples, all being adapted for either standards or pyramids. The list is small, but variety must not be aimed at by those who hope to grow for profit as well as pleasure. *Pears*: Williams' Bon Chrétien, Beurré Superfin, Beurré Diel, Duchesse d'Angoulême, Beurré d'Aremberg, and Josephine de Malines keep up the supply from August to May. The two last are of medium size, but very prolific and long-keeping varieties. Brockworth Park, Marie Louise d'Uccle, Thompson's, and Beurré de Capiaumont may well be added to the list of autumn Pears if more are wanted; the latter on account of its being so remarkably free-bearing. *Apples*: Red Quarrenden and Cox's Orange Pippin are two good dessert varieties, the following being admissible either as kitchen or dessert Apples: Blenheim Pippin, Cellini, Reineette du Canada, and Bess Pool. The next four are excellent kitchen varieties: Keswick Codlin, Red Hawthornden, Wellington, and Warner's King. The above list will keep up the supply from August to April. It is advisable to have the Pears on the Pear stock and the Apples on the Crab, on account of their superior vigour and durability. Plums, too, are very remunerative when grown as standards; and the Damson is very useful, and invariably sells well, which ought to be an inducement to those who like to market their surplus produce. The Cluster or Crittenden Damson is a variety largely planted by market growers. Of Plums we recommend Early Rivers or Early Prolific, which, though small, is very early and free-bearing; Green Gage, Victoria, Washington, Pond's Seedling, Kirke's, and Coe's Golden Drop. Cherries also succeed well when grown as standards, but unless properly attended to the fruit when ripening is invariably taken by birds, and for this reason are not recommended.

LIST OF FLOWER SEEDS.—There are many useful greenhouse plants that may be obtained from seed, but unfortunately the majority require to be sown in heat or they do not germinate very freely. Many small gardens can command a hotbed and frame, and these if well managed are the best of places for seed-sowing. Failing these much may be done with patent propagating frames heated with lamps as advertised, and there are also methods by which they can be raised for a trifling outlay, which will be pointed out at the proper time. The size of packets must be left to the buyers, and for obvious reasons no particular grower's strains will be recommended. Those marked with an asterisk will require to be sown in heat, the others may be sown in the greenhouse, and suitable advice on the culture of all enumerated will be offered later on. For description of the following see catalogues. **Acacia lophantha*, **Amaranthus Henderi*, Balsams, *Browallia elata*, *Cineraria*, *Cobaea scandens*, *Cyclamen persicum*, **Ecceomocarpus scaber*, **Gloxinias*, *Godetia Lady Albemarle*, **Lophospermum scandens*, *Mignonette pyramidal*, *Myosotis disitiflora*, *Schizanthus Grahams*, *S. retusus*, and *S. retusus albus*, **Sensitive Plant*, *Solanum Capsicastrum*, *Capsicum Princess*

of Wales, **Torenia Fournieri*, *Petunia double*; *Primula sinensis*, mixed; *Tropaeolum Lobbianum*, *T. Fireball*, *T. elegans nana*, *T. Prince of Wales*, and *T. Von Moltke*. **Coleus*, **Tuberous-rooted Begonias* and *Calceolarias*. The following are suited for the flower garden, to be sown under glass and transplanted:—*Ageratum Imperial Dwarf*, **Amaranthus melancholicus ruber* (a good substitute for Iresine), *Asters*, *Balsam*, **Chamaepeuce diacantha*, *Cineraria maritima*, **Eucalyptus globulus*, *Dianthus diadematus*, double, and *D. chinensis Heddeewigii*, *Godetia Lady Albemarle*, *Indian Pinks*, *Marigolds African* and *French* (the miniature French is a good substitute for *Calceolarias*); *Pansies*, *Pentstemon*, *Petunia*, single; *Phlox Drummondii*, **Ricinus*, *Viola*, *Zea japonica*, *Zinnia elegans*, and *Helichrysum*. The following can be sown in the open:—*Antirrhinum*, *Calliopeis*, *Candytuft*; *Cosyulus*, both major and minor varieties; *Delphinium formosum*, *Eschscholtzia crocea*, *E. crocea flore-pleno*, and *E. Mandam*, *Godetia Honesty*, *Hibiscus*, *Larkspur*, *Linum*, *Lupinus*, *Malope grandiflora*, *Mignonette*; *Nasturtium*, *Tom Thumb varieties*; *Sweet Peas*, *Poppies*, *Salpiglossis*, *Sweet William*, *Wallflower*. Stocks in variety, *Pyrethrum Golden Feather*, and *Lobelia speciosa* ought to have been included in the list of those bedding plants to be sown in heat.

WORK FOR THE WEEK.

KITCHEN GARDEN.

Forcing Department.—Continue to make beds and plant with Potatoes when the soil is warmed, employing sets that have been advanced in a Peach house, preserving all the roots possible, and placing the sets about 4 inches deep and 15 to 18 inches apart. Nothing is gained by close planting. Varieties with short haulms may be planted 1 foot apart. Early Bird has a short haulm; affording tubers early and of good size, it must become a general favourite for growing in frames. A succession of Radish seed should also be sown on beds of fermenting materials. Scarlet Forcing Turnip and the White Forcing Turnip are earlier than the French Breakfast by a week or ten days, and those with Wood's Frame are the best for forcing purposes. They may be taken as a crop in the Potato frames, but where frames are to be occupied with Carrots the Radishes may be sown in rows alternately with them at about 4 inches. Carrots, Radishes, &c., in frames will require air on all favourable occasions, so as to prevent the plants from becoming leggy in a young state. A good supply of Mint and a few roots of Tarragon should be taken up and placed in pots or boxes in a warm house. Slugs are destructive to early Carrots; dust freely with dry wood ashes, and place baits of Cabbage or Lettuce, and examine them after dark with a lantern. Introduce fresh roots of Rhubarb, Seakale, and Chicory to the Mushroom house so as to meet the demand, not omitting to maintain the succession of that esteemed vegetable Asparagus.

FRUIT HOUSES.

Peaches and Nectarines.—The trees in the earliest house will soon require disbudding, a process that requires to be cautiously performed, commencing by taking off a few foreright shoots first. Care must be exercised to leave a shoot at the base of the present bearing shoot to supply its place next season, and another must be retained above the fruit to draw the sap to the fruit, the upper shoot having its point pinched out at about the third leaf, unless it be necessary for the extension of the trees, when it should be trained-in its full length. If the trees are not of full size the shoots necessary for the formation of the trees should be trained 12 to 15 inches apart. It is of primary importance in the cultivation of the Peach and Nectarine that the shoots be trained so as to admit of the foliage being fully exposed to light and air, therefore avoid overcrowding, and the questionable practice of leaving shoots that must be removed at a more advanced stage of growth. After the fruit is set give an occasional syringing in the early part of fine afternoons. When the fruits are too thickly set remove a few of the smallest and those on the under side of the branches, but do not thin them too severely; thinning, like disbudding, should be done gradually. If aphides appear fumigate moderately two or three times on consecutive evenings. Continue the temperature advised in our last calendar, ventilating carefully, as cold draughts give a check that may cause the fruit to fall. In clear frosty weather it is safer to allow the temperature to rise a little higher than to open the ventilators too much. In watering inside borders liquid manure will assist weakly trees to swell their fruit in the first stage. When the trees started early in the month are swelling the buds and showing colour the night temperature may be advanced to 45° to 50°, and to 50° or 55° in the daytime by artificial means, and 60° to 65° from sun heat, ventilating freely above 55°. Cease syringing the trees, but damp available surface occasionally in bright weather. Trees in succession and late houses should have plenty of ventilation in favourable weather to keep them back, the buds already showing indications of swelling.

Figs.—Ventilation must be strictly attended to. The temperature by artificial means should be 65° by day, 10° to 15° advance being allowed from sun heat and with moderate ventilation, and 60° at night, allowing 10° more by day when the weather is mild, and falling

5° at night when the weather is severe. The bottom heat for trees in pots should be kept steady at 75°. When the shoots have made a growth of 4 to 5 inches pinch out the point of each, and entirely remove all superfluous growths. Water will now be required plentifully, guano water being beneficial. Mulch the surface of the soil with about 2 inches of well-decomposed manure in a lumpy state. Syringe the trees twice a day, and damp available surfaces as may be necessary to secure a genial atmosphere. Avoid, however, hasty treatment with too much humidity in the atmosphere. Continue the treatment as advised in our last calendar for trees which are permanently planted out.

Orchard House.—The trees in pots that have been placed outdoors should be returned to the house if it has been thoroughly cleaned. The trees may be placed in their proper positions, but as we may yet experience severe frost they may be arranged somewhat closely to admit of the pots being surrounded with some dry litter. Trees in pots that have been kept in the house and protected with dry litter to prevent injury to the roots by severe frost should be examined, and if the soil in the pots be at all dry water should be given, nothing being so injurious to fruit trees as a very dry condition of the soil during their season of rest, often resulting in the dropping of the flower buds, especially Peaches and Nectarines. To prevent as far as possible the buds from swelling prematurely the ventilators should be kept open by night as well as by day, closing only when the temperature outside falls below freezing point, opening the ventilators in the morning unless the frost is intense and the sky obscured, it being of the greatest importance to prevent as far as possible the temperature of the house being raised to any great extent at this season by bright sun. If there be any trace of brown aphides dress the trees with diluted tobacco juice.

FLOWER GARDEN.

Neatness and order are especially requisite in this department, as a few scattered leaves, weedy walks, uneven turf, and trodden-down edging are very offensive. Wormcasts are a great disfigurement on grass, and should be removed by frequent sweeping and rolling, or destroying the worms that caused them. Clear lime water may be made by mixing a bushel of lime with 150 gallons of water, and if this is poured on the lawn quickly through a rose watering pot after rain the worms will soon come to the surface, when they may be swept up and destroyed. Weeds on lawns, such as Daisies, Plantains, &c., should be carefully removed, digging them out entirely by the roots, employing a sharpened piece of iron having a swan-neck bend to act as a lever. Examine and make good any defects in Box edgings. If the Box does not thrive some fine chalk may be added to the soil before planting, which will to some extent make up for the deficiency of calcareous matter in the soil, the most general cause of the Box not growing satisfactorily. Ground intended to be planted with Dahlias, Hollyhocks, and Gladioli should be trenched and liberally manured.

Hardy Trees and Shrubs.—Although it is very desirable that deciduous trees and shrubs should be planted in late autumn or early winter it is not always practicable. Draining and trenching ground should now be pushed forward, so that planting may be proceeded with at the earliest opportunity. Planting, however, should not be done when the ground is frozen or very wet. Planting without any regard to the condition of the soil is sure to be followed by bad results. Top-heavy plants should be made secure either with stakes or guys as the work of planting proceeds, guys being preferable, as they give the plants perfect support, whilst admitting an oscillation similar to what is obviously advantageous to them naturally. All hardy deciduous shrubs that require pruning should be attended to at once. If they have been attended to in this respect in former years they will require but little pruning now; a little regulating of the branches to keep them in good form and within due bounds is all that deciduous trees and shrubs require. Hard pruning is certain to result in strong growth, and the flowering is proportionately reduced. Fork over beds and borders, and give a top-dressing of well-decomposed manure where the soil is poor and the growth not satisfactory. Honeysuckles, Clematises, Jasmines, Wistarias, Ayrshire and other climbing Roses on trellises or arbours should be trimmed and trained; the shoots to be laid in being comparatively few, as the tendency is to overcrowd the space allotted to each plant with young growth, and the result is a superabundance of small flowers. Tender wall shrubs, as Ceanothuses, Magnolias, Edwardsias, &c., will require protection in severe weather in cold localities.

PLANT HOUSES.

Camellias where planted out often become very crowded. In such case, especially if they have become thin and straggling, cut some of them into shape, and after they have made a season's growth take them up and place them in pots or tubs, in which they will soon make fine specimens. The Camellia is not much subject to insect pests, but is occasionally attacked by scale, which should be removed with a brush and sponge, giving the whole of the plants a careful cleaning before growth commences. If there is any indication by the growth being weak remove the surface soil down to the roots, but without injury to them, and apply a dressing of good fresh compost. Camellias in pots should

also be thoroughly examined for insects, sponging their leaves on both sides. Any that are in need of additional root space should shortly be potted, so as to enable their roots to become established in the new soil before the growth begins. In potting Camellias the new soil should be rammed quite as hard as the old ball, for if this be not attended to the water will run through the new soil, leaving the ball a hard dry mass, reducing the plants to a bad condition. Light turfy loam will grow Camellias perfectly, but they do equally well with an admixture of peat, sandy and fibrous.

Azaleas.—Plants that are in vigorous health will now or shortly begin to push young growth round the base of the flower buds. This is an indication of good health, and will not in any way interfere with the flowering, providing the growth and buds were well ripened in the autumn; but when that is not the case the flowering will certainly be poor. Plants that are required for blooming late should be placed in a house with a north aspect, where they will be kept cool. Young plants of new varieties that it is desirable to grow on quickly may be placed in heat, so as to give them as long a season's growth as possible.

Conservatory.—The leaves of the permanent occupants of this structure should be cleaned from the accumulations of dust, especially where the syringe can be but little employed. If there be any scale the whole of the wood and leaves should be washed with brush or sponge, employing some approved insecticide. The climbers should be examined, cutting in such plants as Passifloras and Clematises to firm ripe wood, and well thinning out where it is desirable to leave young wood, taking advantage of the lessened bulk of the plants to give them a thorough cleaning. Acacias are much subject to white scale, and the pest increases so fast that every plant near them is soon affected, therefore the plants should be examined frequently to prevent it from spreading. It takes a considerable time to clean all the plants, but the labour bestowed is amply repaid before the end of the season. Where the plants temporarily used are arranged in groups vary the arrangement from time to time, which affords more interesting displays. Borders for climbers being mostly restricted remove a couple of inches of the surface soil, and dress the surface with rich and fresh soil.

TRADE CATALOGUES RECEIVED.

Wm. Paul & Son, Waltham Cross.—*Catalogue of Vegetable and Flower Seeds.*

Charles Sharpe & Co., Sleaford, Lincolnshire.—*Illustrated List of Vegetable and Flower Seeds.*

William Rumsey, Waltham Cross.—*Catalogue of Vegetable and Flower Seeds.*

J. T. Rofe, New Town, Enfield.—*Catalogue of Vegetable and Flower Seeds.*

James Vick, Rochester, N.Y.—*Illustrated Floral Guide.*

Louis Van Houtte, Ghent, Belgium.—*Catalogue of Gesneriaceous Plants.*

TO CORRESPONDENTS.

* * All correspondence should be directed either to "The Editors" or to "The Publisher." Letters addressed to Mr. Johnson or Dr. Hogg often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

RAISING CUCUMBER PLANTS (A Constant Reader).—In a warm greenhouse such as yours appears to be you may raise Cucumber plants by enclosing a space over the hot-water pipes and covering it with glass; but it is important that the propagating bed so formed be in a light position, or the plants will grow weakly and be of little use. The space may be enclosed with either brickwork or stout boards. The pipes should be covered with rubble of any kind, over which should be placed leaves or litter; then fill in with cocoa-nut fibre refuse, sawdust, or ashes, whichever you employ for plunging the pots in, the former being preferable. This plunging material should be at the least a foot in depth, and should be as near to the glass as possible consistently with having head room for the plants. If you can maintain in the case a minimum temperature of 55° you may raise Cucumber and other tender plants from seed and strike cuttings. If you wish to grow Cucumbers in the greenhouse you had better not sow the seed too early. The month of April will be soon enough, then by the time the plants are strong the house will perhaps be sufficiently warm for them to continue their growth. If raised too early they will sustain a check when removed from the case which will probably prove fatal.

RAISING AGERATUMS FROM SEED (Idem).—Plants raised from seed sown this spring will flower during the ensuing summer. Drain the pots or pans well, and fill them with rich light soil, to be very fine on the surface. Water the soil well, and twenty-four hours afterwards sow the seed thinly, dust it over with finely sifted soil, place a square of glass on each pot, and plunge the pots in a frame or propagating case; or they may be stood in a warm position in the greenhouse. The soil must be kept regularly moist, and the seedlings will soon appear. The glass must then be tilted for a few days preparatory to removing it, and shortly afterwards the pots should be placed on a shelf near the glass in a genial temperature to induce the plants to assume a dwarf sturdy habit. As soon as they can be conveniently handled prick them out thinly in boxes, and grow them on steadily in a light position. Some of the plants will probably grow much stronger than others, and these, if dwarf plants of equal height are required, should be weeded out. In order to secure plants as dwarf and floriferous as possible we have often taken off the tops of seedling plants, and struck them as cuttings with

advantage. The seed may be sown in February or March, according to conveniences for growing-on the plants.

PRUNING TEA ROSES (A Young Gardener).—As the plants in the Rose house have made growths at the ends of the shoots an inch long you had better at once cut out any weakly or scraggy growths, and retain the stronger healthy shoots nearly their entire length, only removing the immature tips. The shoots can then be bent down in the form of arches, their extremities secured to pegs in the soil, or they may be trained round stakes and secured in any form you think best. They will then produce blooms from nearly every bud, and by bending the shoots down strong growths will issue from their base that should be preserved for producing flowers the following season. The Hybrid Perpetuals should be pruned more closely. Cut out as much of the old wood as you can, and shorten the young growths according to the strength of the plants. Very weak shoots may be shortened to about 3 inches, those of medium strength to 5 or 6 inches, and the very strong growers to 9 inches or a foot. If the foliage of the Tea Roses is healthy do not remove it from the shoots you retain for producing flowers.

RESTING FOLIAGE BEGONIAS (Sussex Subscriber).—Plants of this class of Begonias ought not to be "dried off" at any time. The soil should be kept moderately moist during the winter, the supplies of water being increased as the weather becomes warmer in the spring. The plants should be re-potted, or top-dressed if they are in large pots, when fresh leaves commence forming in the spring. A few of the older leaves that become brown at the edges may be removed at the time of potting. When the plants are in full growth they require copious supplies of water, and the foliage is finer if the plants are grown in partial shade during the summer. The conservatory having a minimum temperature of 45° in winter is a suitable place for them. You will find the "Cottage Gardener's Dictionary" a very useful work. Its price is 6s. 6d. through a bookseller, or 7s. 2d. post free from our office.

PLANTING CROCUSES (D. E., Bristol).—The "bulbs" that you have purchased so cheap and which have made "such beautiful growths" will perhaps disappoint you. We have often known corns similar to yours perish after being planted so late. Crocuses ought to be planted in the autumn, when roots will form to support the growths that are made at the same time, but the fine growths of many of your corns will probably perish before roots are formed to support them. All you can do is to plant the corns in well-pulverised soil, drawing drills for them 2 inches deep preferably to dropping them into holes made with a dibber. Place the corns in the drills, not pressing them down firmly, surround them with sand and cover them with light soil. Unless the soil is in such condition that the water passes away freely many of the corns will decay. It is for this reason that we do not advise planting with the dibber, as the holes made with that handy implement at this season of the year are in some soils only so many miniature water traps.

PROPAGATING LEUCOPHYTON BROWNII AND KLEINIA REPENS (W. E. M.).—Leucophyton Brownii should be increased by inserting slips or cuttings in very sandy soil in the autumn. They may be either inserted in pots or in sand placed in the frame, and be kept free from frost. The plants thus raised are much more healthy than if grown in a house. Cuttings will strike in heat in the spring, but the plants never thrive so satisfactorily as those struck in autumn and grown without the aid of fire heat. Kleinia repens may be propagated during the spring and throughout the summer. They should be inserted in very gritty soil, the pots or boxes being placed on a shelf in a cool stove or propagating house. During summer they strike freely in the greenhouse or open air. The plants should be wintered on a shelf in a house having a minimum temperature of 45°, when they will be kept slowly growing. Your plants have either been kept too cold in the vinery, or if they were planted out last summer were not removed from the beds soon enough in the autumn.

NERTEA DEPRESSA (Idem).—If you keep the plants quite close to the glass in a very light house or frame, and water them copiously, they will flower freely and produce an abundance of berries. This plant cannot well have too much water and sun during the growing season. The best berried plants we ever saw were plunged in ashes on a warm south border from April onwards, and watered daily, often twice a day, during hot sunny weather. They were well hardened before being plunged, and were protected with mats when the nights were frosty. But in your district the plants would probably be best plunged in a very light frame, but they should only be a few inches from the glass, and the frame-light might be drawn off entirely during favourable weather. Plectopomas and Negellias require the same general treatment as Achimenes.

CLIMBERS FOR A WALL (E. J. R.).—As an evergreen covering for walls nothing is more easily managed than Ivy, and it will not injure the walls which have access to it. There is no deciduous wall plant to equal Ampelopsis Vetchii. It forms a close covering, clings to a wall with the tenacity of Ivy; and in the autumn, especially when grown on a sunny aspect, its foliage assumes a rich glowing crimson hue that is very striking. The common Virginian Creeper, Ampelopsis hederacea, grows still more rapidly, but its growth requires securing to the wall. If you want flowering plants plant climbing Roses and Clematis Jackmani.

HEATING WITH PIPES BELOW BOILER (J. Robinson).—Your proposed mode of heating will not answer, as the water will invariably return, even if you have a circulating box, by the return pipe in the house, where it is 13 inches above the bottom of the boiler, and will not circulate at all in the pipes of the proposed house 10 inches below the bottom of the boiler. Could you not lower the boiler? In that case there would not be any difficulty, the second house being heated by return pipes, which would admit of your getting the pipes beneath the pathway. Indiarubber rings answer very well for the joints, or they may be made quite secure by caulking in the first instance with tarred rope, and then filling up the sockets with Portland cement.

GARDENING UNDER DIFFICULTIES (J. P. A.).—We are much obliged to you for your letter, and are pleased to hear of your success. We shall be glad to hear from you at any time. Your questions shall be answered next week.

PARAFFIN STOVE IN CONSERVATORY (Armiger).—We did not recommend the stove for heating a conservatory, but for excluding frost from frames and pits, and for this purpose it has answered our expectations. Such small stoves are not suitable for raising the temperature of conservatories, as for this purpose the stoves have to be heated to their utmost limit, and an unpleasant and injurious smell then results. We fully agree with the remark of a correspondent on page 461 of our issue of December 11th, 1879, where he observes his stove is "never used except for preventing the thermometer

falling below 35°. Were I to raise to raise the temperature of the house 10° I should do more harm than good to the plants. That is where mistakes are made in stove-heating—firing to raise the heat instead of just to keep out frost." Something more than this is required for conservatories, and for those structures we have never recommended the small stoves to which you refer. We never recommend any appliances requiring the test of experience without having submitted them to such test.

PROPAGATION OF LANTANAS (Puddle).—The best and quickest method of increasing Lantana is by cuttings, which strike readily in light sandy soil in an ordinary propagating frame. The seeds require to be sown immediately they become ripe, and your seeds must have been either too old or imperfect, or they would have germinated before this. The Lantana is not an annual but a half-hardy perennial, and succeeds well out of doors in the summer. The Orange tree should be placed in a cool house but protected from frost, and no doubt it will soon recover.

GARDEN PATIS (A Constant Reader).—As you object to gravel and stone on the score of expense we presume it is no use our recommending you to employ asphalt, which is very durable and clean; and as you do not desire to have grass walks we can only suggest that you use coal ashes, which form dry and serviceable paths that are easily kept in order. Although ash walks are not particularly ornamental they are not unsuitable for a kitchen garden some distance from the residence of the owner.

STOCKS FOR FRUIT TREES (D. E. W. T.).—Paradise and Quire stocks are readily increased by cuttings inserted in early autumn, Mahaleb stocks from seeds alone. If you write to Mr. Rivers of Sawbridgeworth we think you can obtain all the stocks in a small state and at a moderate price. This mode of obtaining them will be more satisfactory to you than attempting to raise your own, and if you do attempt to do so you must expect to incur losses and disappointment. Your kindly expressions are appreciated, and you will be glad to learn that we receive such pleasant letters as your own during every week in the year.

OPINIONS ON HEATING (An Amateur).—When the fire of a boiler furnace is surrounded by brickwork much heat is absorbed by the bricks and hence wasted; but when the fire is surrounded by pipes containing water or by portions of the boiler those surfaces absorb the heat from the fire, and the temperature of the water is raised in the most direct manner. All furnaces that we are acquainted with are adapted for the consumption of coke, but for saddle boilers especially we prefer a mixture of coal and coke as fuel to either of these used alone. Coke has probably a slight corroding effect, but as we are intimately acquainted with a tubular boiler that has been worked hard for more than twenty years with coke, and the apparatus is as efficient as ever, we do not regard the question as of serious practical importance.

CINERARIA LEAVES CURLING (H. N., Northwich).—The leaves of these plants curl through three causes—injury from frost, insect attacks, and drought at the roots. A careful examination will show if the plants are infested with insects, which often crowd amongst the flower buds, and are not visible to the casual observer. Dipping the plants in a warm solution of soft soap at the strength of 2 ozs. of soap to a gallon of water, with a little tobacco juice added, will destroy the aphids on plants thus affected. If the tobacco juice has been allowed to become quite dry at the roots at any time those roots would shrivel, and curling of the leaves would follow. In this case there is no remedy, but the evil may be mitigated by removing a little of the surface soil and applying a top-dressing of very much decayed manure and loam in equal parts, so as to induce the emission of fresh roots. If they have been injured by frost during the late severe weather we fear that you cannot adopt any means that will render the plants healthy and their flowering satisfactory. A cool temperature of 40° to 45° with careful watering is the only practice we can recommend under these circumstances. Another cause of the curling of the leaves occurs to us, and that is removing the plants from a cool and moist frame in which they have made large succulent leaves and placing them on an open latticed stage in a very dry house. When the plants have been for a long time placed on moist ashes in a frame they should, on being introduced to another stage in a house, have a layer of moss placed under and between the pots, and if this is kept damp for a time it contributes materially to prevent the leaves curling.

GROWING ANEMONE FULGENS IN POTS (An Old Subscriber).—Anemones do not usually succeed well in pots, yet we have occasionally seen them produced in good condition. Six-inch pots are suitable; drain them well, and protect the drainage with moss or leaves before filling in the soil. This should consist of two-thirds of decayed turfy loam and one-third of leaf soil, adding some sand if the loam is heavy. The compost must be just sufficiently moist for the particles to adhere when the soil is grasped tightly in the hands, yet not so wet as to show the finger marks. Fill the pots to within 3 inches of the rim, making the compost rather firm but not hard. Spread on this a layer of clean sand, on which place the tubers, being careful that the crowns are uppermost. Inexperienced amateurs sometimes make mistakes on this point. Six good-sized tubers will be sufficient for a pot, and if they are not good they are no use for this mode of culture. Just cover them with sand, then fill in with soil to within half an inch, or slightly more rather than less, so as to afford space for holding water, of which copious supplies are necessary when the plants are in full growth. Plunge the pots just over their rims in damp ashes in a frame. No water will be needed until growth commences. Examine the pots from time to time, and immediately the growth is seen pushing through the soil, and before it is through the ashes, take up the pots, shake the ashes out of them, and replunge so that the plants are as near to the glass as possible, for they cannot have too much light. Ventilate freely on all favourable occasions, and on mild days remove the lights entirely so as to promote sturdy growth. If the frame is kept too close the plants will be drawn and rendered useless. Water carefully yet sufficiently, increasing the supplies as the plants advance in growth. When the flower stems appear give very weak liquid manure occasionally, perfectly clear soot water being a good and safe stimulant. As soon as the flowers show their colour the plants may, if desired, be removed to a light position in the greenhouse, watering them very liberally. By carrying out these instructions with precision you may succeed in growing this brilliant plant to your satisfaction. The periodical to which you refer was started in 1862, and was published by Messrs. Kent & Co.

NAMES OF FRUITS (A. C. H. O.).—Your fruit without numbers attached, and of which, not having your explanation, we thought it useless to examine at the time it was received, is now, we are sorry to find, quite too much shrivelled for identification.

NAMES OF PLANTS (Holm).—1, Asplenium obtusatum; 2, A. flaccidum; 3, Polystichum aculeatum. (J. M.).—The specimen is Helleborus foetidus.

(C. J. P.).—1, *Begonia falcifolia*; 2, *B. Weltoniensis*; 3, *Centradenia floribunda*; 4, *Echeveria retusa*; 5, *Coccoloba platyclada*. Williams' "Stove and Greenhouse Plants" is the best work we know on the subject you name.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

PARING AND BURNING LAND.

(Continued from page 51.)

THE last objection which we have to notice is on the ground of expense, and maintaining that it is more profitable to lay out money in the purchase of guano, superphosphate, or other artificial manures than to spend it in paring and burning. In reply we may observe that the result of our experience, as well as the opinions of practical men on this subject, furnish most reliable evidence that paring and burning, as practised by the best farmers on the Cotswold Hills and in various parts of the kingdom, is that it has been found to be the most economical means of raising on land of certain descriptions a good crop of turnips.

We quote from Dr. Voelcker's essay on the subject, who observes that "Numerous personal inquiries lead me to confirm the opinion expressed by Mr. Caird, who says that the best farmers on the wold lands burn the most, and he rests his opinion on the testimony of several practical men. Amongst other things he mentions a field which had been broken up from its natural state exactly fifty years ago; it was then pared and burned, and so started for the first crop of turnips, which supported the other crops of the course. The same process had since been seven times repeated; no manure of any kind had ever been applied, except such as arose from the consumption of its own produce on the ground, and the crops in each succeeding rotation had shown no sign of decreasing. The soil, which lies on the limestone formation, is very thin, but as it is not more so than when first broken up its depth must have been maintained by the ploughman, perhaps imperceptibly, bringing up some fresh subsoil after each burning." We have quoted this because it is so much in accordance with our own practice in paring and burning, for after spreading the ashes resulting from burning we have never had occasion to apply manure of any kind for a number of years when the soil burned has been of a strong loam or clay nature. In again quoting Dr. Voelcker in respect of the mode of burning, which completely confirms our practice, he says, "A certain degree of heat is necessary to induce a proper chemical action; but, as demonstrated by my former experiments, an excessive heat should be carefully avoided, inasmuch as it has the effect of rendering burnt clay again less soluble. It is no doubt for this reason that practical men recommend stife burning, for this prevents the heat of the heaps of burning soil becoming too intense, and consequently stife-burnt clay is always very porous, crumbles readily into powder, and is more easily soluble than clay burnt at too high a temperature."

In accounting for the advantages of paring and burning the changes in the inorganic matters of the soil must not be overlooked. Soils which are regularly pared and burned often contain much vegetable and organic matter, and afford therein fuel for burning a considerable quantity of the soil itself. It must be understood that the destruction by fire of the organic remains in heavy soils, far from doing any harm, is the most available and economical way of preventing their undue accumulation. The fire, we would observe, also destroys insects, their eggs and larvae, as well as the seeds of weeds, bits of underground stems, which, like the knots of couch, are apt to grow again, and which therefore cannot be disposed of so effectually as by burning; in short, nothing cleans land so thoroughly as paring and burning. We must now observe that the excess of undecomposed vegetable matters are found to be decidedly injurious to vegetation. Peaty soils furnish familiar examples of this. It must be further observed that it is sometimes very difficult to burn soils upon peat, for we were once rather alarmed when burning the surface of meadow land at the fact of the subsoil, which was peat, having

caught fire under the heaps. This land had been previously tiledrained at heavy cost, and we were afraid that reducing the peat soil to ashes would not only destroy the level of the surface of the soil but disturb our draining, and the fire was so subterranean and so strong before we discovered it that we had some trouble in extinguishing it. We mention this matter as having occurred on our own property, in order that it may be avoided by the home farmer in any paring and burning projects he may be engaged in.

We again refer to Dr. Voelcker as our greatest authority upon the subject, who states the result of burning the surface soil in a field of rather thin soil in small heaps varying in size. Each little heap produced about three bushels of red ashes. On an acre there were about 146 such heaps, and weighed in their natural condition it was found that an acre had furnished 14 tons, 17 cwt., 2 qrs., 11 lbs., or, in round numbers, 15 tons of red ashes; but, according to determinations, the 15 tons of ashes give nearly 12 tons of dry ashes. It is further calculated that this quantity of ashes gives 184 lbs. of phosphoric acid; 184 lbs. of phosphoric acid united with lime give 398 lbs. of tribasic phosphate of lime or bone earth per acre. Commercial bone dust contains on an average 46 per cent. of bone earth; 398 lbs. of bone earth accordingly are equivalent to the phosphate of lime contained in 7 cwt., 2 qrs., 25 lbs. of commercial bone dust. The weight of a bushel of bone dust varies from 40 lbs. to 44 lbs. Taking 43 lbs. as the average weight per bushel, 7 cwt., 2 qrs., 26 lbs. of bone dust will give almost exactly twenty bushels; thus these ashes contained a quantity of phosphoric acid which is equal to that contained in twenty bushels of bone dust. We must now make a comparison between the value of the vegetable red ashes produced from an acre of ground with a dressing of farmyard manure, guano, superphosphate, or other artificial manures, and it is found and ascertained by analysis that the money value of the ashes would vary from £3 to £3 10s. per acre. In this estimate, however, no account is taken of the mechanical improvement of the land, of the uniform distribution of the manuring agents, and the advantages of paring and burning as a most efficient cleaning operation.

In conclusion it must be understood that the destruction of vegetable matter in soils adapted for paring and burning is not attended with any evil consequences. Inert vegetable matter is changed by burning into highly effective mineral food for root crops. Burning improves materially the mechanical condition of the strong soils by rendering them more porous and more easily cultivated. The ashes produced by paring and burning are especially useful to turnips and other green crops, because they contain a large portion of phosphates and also potash, constituents which are well known to promote in a high degree the luxuriant growth of root crops. We only advise paring and burning upon soils containing more or less clay or limestone, but is undesirable on sandy or gravelly land. Thin land, from which a good quantity of ashes has been obtained, should not be immediately dressed with rotten dung, guano, or other ammoniacal manures. On the soils indicated paring and burning is not likely to give way to other plans of cultivation. Lastly, instead of being termed an antiquated operation to be avoided, the home farmer should consider it a practice the advantages of which are fully confirmed and explained by modern chemical science, such as may be continued with all the advantages which have been stated so much in detail, and laid before him in so many and varied methods, and especially upon strong land deficient in chalk or lime.

WORK ON THE HOME FARM.

Harre Labour.—This will still be employed in wheat-sowing where it is not finished, and there was more than is usually the case left unsown at the commencement of the frost in November. The frost has, however, proved very beneficial to the land, and where the wheat was sown early on very heavy land, and the seed sown very thin and likely to produce a weak plant, it is now in many cases coming through better than was expected, the frost having lightened and opened the ground. It is still, however, a question of policy as to which is now best to sow—wheat or barley; for if the land continues so dry and friable as it has been lately, it will answer to sow barley instead of wheat, as the land may become too light for wheat, but it cannot be so for barley. The prospect at present is that after such a series of wet seasons we may now have a period quite the reverse; it is therefore desirable to sow barley as soon as the land is ready. Barley when sown early in good tilth is always right, for whether the season afterwards proves wet or dry there is always a better chance of raising a malting sample, and it is only in this case that it will pay better than wheat. We also prefer to sow oats or drege further on in the season; about the middle of February or the first week in March is the best time, as they will not bear and recover from a check in growth like barley, and this especially applies to the best sorts of white oats. We still advocate the sowing of drege, more particularly as the screen lately shown in work at the Agricultural Hall makes such excellent work in dividing the barley from the oats. It being now reduced to a certainty that the best samples of malting barley are grown amongst the oats, more particularly

upon the mixed soils where the barley grown by itself is usually thin in sample.

Hand Labour.—This will now still consist of hedging, ditching, banking, planting of quicks, &c. The women and some men may be employed in forking out the bunches of couch grass where but little remains in the young clovers, also upon the wheat stubbles intended to be sown with either oats or barley. When this is done it saves much horse labour at a future time; in fact, where but little couch is found it is often said there is not enough to injure the next crop, but although this may be true it involves costly labour in the future and often the delay of the seed time. The time for planting firs, &c., has now arrived, and we recommend for the consideration of noblemen and gentlemen upon their home farms, more particularly upon the outlying and poorest soils, the planting of larch firs as thick as cabbages. When planted in this way they will often furnish a crop to be sold as hop poles at the end of twelve or thirteen years where the soil is suitable; in fact, much poor down land or sheep walks after being pared and burned may well be planted with firs at 8 feet between the lines and 2 feet in the lines, because this crop always pays well whilst young for horse-hoeing and hand-hoeing. If the land is strong it may be planted with alternate lines of firs and sweet chestnuts, so that when the trees are of a suitable size to sell as timber the chestnut stools will remain to furnish underwood in the future. In this manner much poor land not now worth 5s. per acre rental may be made to pay as well as good arable land. Where the land is much exposed Scotch firs should be planted on the outsides and across the land at wide intervals to shelter the young larch firs. In case, however, any cold clay land should be planted it may be laid into ridges 9 feet wide with deep furrows, and this wonderfully assists the early growth of the firs by carrying away any superfluous water.

Dairy cows are now for the most part within a short time of calving, and, although out of profit for a time, they may be allowed to run upon the pastures where the land is dry with some old grass left, returning to the sheds at night, and receive about four or five heads of the large Drumhead Champion cabbages morning and evening, with sweet oat, straw, and hay chaff mixed. This food will suit them best before calving, for we do not like to feed the cows with cake before calving so as to make internal fat, as this is often an exciting cause of milk fever and other complaints at the time of parturition. Let the cart horses now have an allowance daily of about 8 or 10 lbs. of carrots or mangold given twice, mixed with hay and straw chaff, in addition to the usual bait of oats or maize. This will keep them in condition, and fit them for the severe work of the coming season. In speaking of sheep we must say that they have done well this winter in consequence of dry weather prevailing; and as there has been such extensive losses by rot, the home farmer may feel assured that the feeding with cake and crushed thin wheat will pay well this year, as mutton is likely to fetch a good price. The same argument applies to the early lambs, and especially to the ewes, thus selling the ewes and lambs at the same time, the ewes receiving cracked beans in the last few weeks.

THE CAMBRIDGE POULTRY AND PIGEON SHOW.

THE Cambridgeshire Ornithological Society held its Show on the 18th and 14th inst. in the new Corn Exchange, Cambridge, a fine well-lighted building admirably adapted to the purpose. The entries were very numerous—viz., over 1250, including Rabbits and cage birds, and the quality of the exhibits far above the average of shows; in fact, we quite expect ere long to see the Cambridge Show a rival of that held in the sister University city. For the larger varieties of poultry, birds which had won at the Crystal Palace or Birmingham were not eligible; another new feature in the schedule was that pullets were exhibited in pairs.

Dorkings were not so remarkable as some classes, but in each of the two classes the first-prize birds were very fine. The first cockerel was a deep short-legged round bird; the first pullets, to which a special prize was also awarded, were dark rose-combed birds, white in feet, good in form, and in perfect condition.

Cochins were very good. The first Buff cockerel almost a perfect bird in colour and shape, the second Partridge cockerel fine. The first Buff pullets were even in colour, well mated; the second Partridge well pencilled, but not sufficiently feathered on the leg. The three winning White cocks were extremely good; first a beautifully shaped and beautifully white bird, second larger and more heavily feathered, but not so good in cushion. The first and second White pullets were beautiful pairs, and the third Blacks well worthy of their place.

Brahmas were a great feature of the Show. The first Dark cockerel was small, but beautiful in shape and silvery in colour; second a very large handsome bird; third and many more were first-class birds. Pullets were better than we have lately seen, nearly all the winners combining size with marking. The first Light cockerel, to which the special prize was awarded, was such a bird as is seldom seen—nearly a model Brahma; second, a massive and magnificent bird, but a little cochiny. The Light pullets made a

good though small class; we saw little to choose between the winning pens.

Game made fair classes. The first Brown Reds, which took a special prize, were good and stylish birds; the first Duckwings fair, pressed closely by Piles.

Bantams.—Game were very numerous. We much admired the first Black Red cockerel, and the second was a pretty little bird, though not yet in full plumage. The other Bantam class brought out a very pretty pair of Blacks, to which first and special was awarded; second Blacks also.

Hamburghs were numerous but not very good; the best pens among them were the first and second Golden-spangles, the first Silver-spangles, the first and second Golden-pencilled, which were the only two pens of the breed containing really good pullets; many of the cockerels were good with coarsely marked pullets. The first Silver-pencils were as good a pair as we have often seen, the first Blacks, to which the special prize went, very green and glossy.

French.—A magnificent pair of Crêves were first, fine Houdans second, and good Crêves third.

Any Other Variety.—Silver Polish came in first; the pullets especially good; Andalusians fine in form, second; Black Spanish third; and Golden Polish fourth. The cockerel very promising.

Ducks.—These classes caused some difficulty, as in more than half the pens a Duck and drake were shown instead of a single bird. The first Aylesburys and the first Pekins were very remarkable pairs, the rest only up to a fair average. The 50s. selling class was well filled and contained some birds worth their price.

Mr. C. F. Montresor judged the Aseels, Mr. O. E. Cresswell the rest of the poultry. The Pigeons were to have been judged by him as well, but in consequence of the enormous entry Mr. T. C. Burnell kindly came to the rescue and took the Pigeon classes. They were not all round nearly so good as the poultry. The first Carrier cock was a fine Black; the first hen a very fair Dun. The first Pouter cock, to which a special prize was awarded, was a Blue good all round. *Dragoons* were good classes, the adults especially; first was a Yellow, second a Red, and third a Silver. The first Short-faced Tumbler a very good Almond, the first Long-faced a Black Mottle. *Jacobins* made very large classes; the first and second cocks were very good Reds. The first hen was a particularly neat Red, second a nice Black. *Turbits* and *Owls* were mixed—a most unsatisfactory arrangement; first a good Blue English Owl, second a Blue Turbit. *Homers* were legion as usual. Short-faced *Antwerps* good, especially the first Red Chequer. **Any Other Variety.**—First, a Black Barb; second, a Satinette; third, a Fantail of English type; fourth, a Black Swallow. All the arrangements of the Show struck us as being particularly good and orderly.

POULTRY.—DORKINGS.—Cockerel.—1, 3, and 4, Mrs. R. Wood. 3, J. B. Wall. *Pair of Pullets.*—1, Rev. W. Howes. 2, Woodgate & Mills. 3, W. Bartholomew. 4, G. M. Morecroft. **COCHINS.—Buff or Partridge.—Cockerel.**—1, E. E. W. Darby. 2, T. J. Saltmarsh. 3, T. Sear. 4, G. H. Wood. *Pair of Pullets.*—1, J. Bloodworth. 2, G. H. Wood. 3, A. E. W. Darby. 4, J. Peck, jun. **Any other variety.—Cockerel.**—1 and 4, G. B. C. Breeze. 2, A. E. W. Darby. 3, Miss M. A. Bullock. *Pair of Pullets.*—1, A. E. W. Darby. 2, Rev. R. S. S. Woodgate. 3, E. Pritchard. 4, G. B. C. Breeze. **BRAHMAS.—Dark.—Cockerel.**—1, Miss E. Shuter. 2, C. C. R. Norris. 3, R. Holland. 4, E. Pritchard. *Pair of Pullets.*—1 and 2, C. C. R. Norris. 3, R. Holland. 4, J. Bloodworth. **Light.—Cockerel.**—1 and 2, P. Fulgrave. 3, G. B. C. Breeze. 4, J. Bloodworth. *Pair of Pullets.*—1, H. Lingwood. 2, G. H. Wood. 3, G. B. C. Breeze. 4, Rev. E. H. Morgan. **GAME.—Black or Brown Red.—Chickens.**—1, C. A. Bothway. 2, W. Adams. 3, W. Ross. 4, H. E. Martin. **Any other variety.—Chickens.**—1, J. Walker. 2, Dr. E. B. Snell. 3, W. Adams. 4, Brown & Tilley. **BANTAMS.—Game.—Chickens.**—1, Woodgate & Mills. 2, Capt. Wetherill. 3, C. Jones. 4, J. Chailand. **Any other variety.—Chickens.**—1, W. D. Oocroft. 2, R. Brown. 3, U. Spary. 4, A. Morgan. **HAMBURGHS.—Golden-spangled.—Chickens.**—1, T. E. Jones. 2, H. Pickles. 3, H. Fiske. 4, G. Randall. *Silver-spangled.*—1, H. R. Plattin. 2, Rev. S. Ashwell. 3, G. Naylor. 4, H. Pickles. *Golden-pencilled.*—1, W. Baldry. 2, T. P. Carver. 3, R. Brown. 4, C. W. Gibbs. *Silver-pencilled.*—1, Dr. E. B. Snell. 2, H. Pickles. 3, H. Kidger. 4, T. P. Carver. **Black.**—1, G. P. Pointer. 2, Kidger. 3, H. R. Plattin. 4, J. Nurse. **FRENCH.—Chickens.**—1, C. W. Gibbs. 2, M. W. L. Brooke. 3, G. Kirby. 4, A. T. Clowes. **ANY OTHER VARIETY.—Chickens.**—1, C. Bloodworth. 2, M. W. L. Brooke. 3, S. Leese. 4, A. W. H. Silvester. **DUCKS.—Aylesbury or Rouen.—Ducklings.**—1 and 3, Dr. E. B. Snell. 2, W. Bygott, jun. 4, J. & W. Birch. **Any other variety.**—1, A. W. H. Silvester. 2, P. F. Fordham. 3, Miss R. Hubbard. 4, J. & W. Birch. **SELLING CLASSES.—Price not to exceed 50s.—Single Bird.**—1, A. P. Byford. 2, G. Kirby. 3, G. M. Morecroft. 4, G. B. C. Breeze. *Price not to exceed 2l.*—1, J. Paxton. 2 and 4, H. J. Gunnell. 3, Turner & Lincoln.

PIGEONS.—CARRIERS.—Cock.—1, G. Smith. 2 and 3, M. G. Hale. 4, A. P. Byford. *Hen.*—1, M. G. Hale. 2, S. Hutt. 3, D. Knight. 4, H. J. Waldock. **POUTERS.—Cock.**—1, J. Stiles. 2, W. D. Rutherford. 3, T. Herrioff. 4, W. Adams. *Hen.*—1, A. P. Byford. 2, J. T. Howard. 3, J. Dyer. 4, F. S. Jones. **DRAGOONS.—Cock or Hen.**—1, F. Elkington. 2, L. J. F. D. Waterman. 3, W. Bugden. 4, G. Mann. **Young.**—1, H. Yardley. 2, J. Atkin. 3, J. W. Wymor. 4, T. M. Tumbler. **Short-faced.**—1, J. Dyer. 2 and 4, A. E. Langridge. 3, J. M. Braid. **JACOBS.—Cock.**—1 and 4, G. Stanfield. 2, W. Nottage. 3, P. Passmore. *Hen.*—1 and 3, G. Stanfield. 2, W. Nottage. 4, Hon. W. Bugden. **TURBITS OR OWLS.**—1, G. Stanfield. 2, W. Bell. 3, J. Kenrick. 4, A. E. Langridge. **ANTWERPS.—Short-faced.**—1 and Special, J. Kenrick. *jun.* 2, T. Kings. 3, H. Yardley. 4, H. Beech. *Homers.*—1, T. R. Hinson. 2, H. Sergeant. 3, W. E. Willis. 4, G. Harrison. **ANY OTHER VARIETY.**—1, M. G. Hale. 2, A. W. H. Silvester. 3, J. Playsted. 4, J. Long. **SELLING CLASSES.**—1, W. Bell. 2, B. Clifton. 3, C. F. Shoosmith. 4, P. Wardle.

RESULTS OF POULTRY KEEPING.

I FORWARD you my statement of account of poultry keeping for the past year, which shows a more favourable result than Mr. Bruce's given on page 52, if the fact is remembered that the average price of eggs in his statement is placed at 1½d., in mine

at 1d. I have charged my eggs at the price in our weekly market, which has ranged from six to eighteen for a shilling. Curiously enough the average is 1d. each within the sum of 8d. The 1406 eggs were laid by fourteen hens of the Brahma and Black Hamburgh breed, as out of the twenty I commenced the year with four were young cockerels, which were killed in March. Out of the 189 eggs set 111 chickens were hatched. The rate, however, claimed a large share of these, otherwise my profit would have been larger. I do not think the ducklings paid for their food. My fowls have a quarter of an acre of grass run and roost in a barn. I feed them three times a day. Morning meal consists of potato peelings and kitchen scraps boiled, mixed into a stiff paste with bran; midday meal, barley or wheat; evening meal, maize. I have charged the whole cost of my nest boxes, &c., to the one year, though of course it would have been fairer to have spread the cost over a longer period.—A LANCASHIRE VICAR.

January, 1879.

	£	s.	d.
To stock at 2s. per head	2	0	0
Food—Maize, 60s.; barley, 36s.; wheat, 18s. 4d.; Indian meal, 36s. 8d.; bran, 29s. 10d.	8	17	10
26 Ducklings purchased	1	16	2
Three Buff Cochins cockerels purchased	0	14	6
Apparatus—Fowl fountains, nest boxes, &c.	0	16	10
Balance	1	10	4

Profit, £1 10s. 4d.

	£	s.	d.
Eggs laid	1406		
Eggs set	189		
Used or sold at 1d. each	1217	5	1
26 Ducks killed	2	10	0
22 Chickens killed	2	11	8
44 Stock at 2s.	4	8	0
Manure	0	8	0
	£15	15	8

VARIETIES.

WE understand that Mr. Leno is prevented by illness from judging at the Shrewsbury Show to-day, and that Mr. O. E. Cresswell has taken his place, withdrawing his entries of poultry from competition.

WE often hear complaints of bought eggs, on the other hand we have known several instances of late of first-rate birds being hatched from eggs sold for sitting. Among others the two Dark Brahma pullets with which Mr. Wheadon won third at the Crystal Palace, second at Birmingham, second at Hull, and second at Ryde, both came in the egg from the yards of Mr. L. C. C. R. Norris.

A CORRESPONDENT writing to us on sheep dealing, states there is almost a regular panic among breeders and dealers of sheep in Sussex, owing to disease of the animals resulting from the wet weather last summer.

THE Committee of the British Bee-keepers' Association met on the 14th inst. at 446, Strand, London, all the members being present. The report of the honey sales sub-committee was presented and adopted. The sub-committee for publishing diagrams illustrative of bee-life and culture stated that the diagrams were completed. Mr. Cheshire showed a draught plan of arrangement which was passed, and the diagrams upon the proposition of Rev. E. Bartrum and Mr. J. P. Jackson were voted to pass into the hands of the lithographer. Mr. John Hunter reported his portion of "Bee-keeping for Cottagers" to be complete. Mr. Cheshire's portion was promised for the next meeting of the Committee. The report of the General Committee was agreed to, which shows the Association to be in a very promising condition. Its funds are healthy, and its members are increasing in numbers.

CONVERSAZIONE OF THE BRITISH BEE-KEEPERS' ASSOCIATION.

THE quarterly conversazione of this Association was held on Wednesday evening, January 14th, when Captain Campbell presided. The Rev. Geo. Rayner read an elegantly expressed and very instructive paper on the "Origin of the Ligurian bee, and the best means of introducing alien queens to stocks." The lecturer exhibited a queen which had arrived in England from Italy at the close of September last, and which he had since kept in the box sent by the breeder without any new bees being added. There were originally about two hundred in number, but they had dwindled to forty or less. The queen had been kept in a warm room, the dead bees being from time to time removed and the box disinfected with a little salicylic acid, and honey given as required; the box was occasionally opened beneath a large glass shade, giving the bees the opportunity for necessary flights, in which generally the queen had joined them. This is especially interesting, as the common idea is that imported queens upon their arrival must of necessity be almost immediately joined to

stocks or die. This is shown to be totally erroneous if common-sense means only are taken to preserve them. This queen had certainly passed seventeen weeks, and these winter weeks, in the company of a tiny knot of bees only, and she is now apparently vigorous in a Rayner cage in the centre of a stock awaiting liberation. The lecturer pointed out the principal points requiring attention in introducing queens, in which he seems to have had almost uniform success. A lively debate followed, in which many valuable suggestions were thrown out, and the usual votes of thanks terminated another of these well-sustained conversazioni.

THE PHYSIOLOGY OF THE HONEY BEE.—No. 2.

LET us now glance at the anatomy of the worker bee. In the head are the wonderful antennæ by which the bee gauges all its work, discovers friend from foe, and holds intercourse with its fellows. In the sides of the head are set a pair of compound eyes, composed of about 8500 different lenses built together like the cells of a honeycomb. In the centre of the forehead are three simple eyes, called stemmata, in the form of a triangle. As the larvæ, hatched and reared in their narrow abodes and having no occasion for distant sight, possess these simple eyes only, it may safely be inferred that these are intended for viewing objects close at hand, while the compound eyes are intended for viewing objects more remote. Dissection under the microscope corroborates this idea, as the different ocelli forming the compound eyes are each shown to be an elongated tube like a telescope, with a lens of very slight convexity and presumably of long range. The stemmata, on the other hand, are small bead-like lenses of great convexity, presumably with a very short radius. Every bee-keeper has observed a bee alight on its floorboard a few inches to the right or left of the entrance and after all be fairly puzzled to find it. After running hither and thither in vain search it generally takes wing, retiring a foot or two, and then darting straight into the hole. Does not this seem to indicate that there is a certain range at which clear vision by either set of eyes is wanting? As a rule, the momentum of the bee in its flight towards a flower or other object will carry it across this line of indistinct vision, but occasionally it does seem to land itself upon it. May not this also account for the well-known fact that during an operation a person standing at the distance of a few feet frequently receives many stings, while the actual operator, whose face is within a few inches of the bees, escapes scot free? I have so frequently observed this, that in operating on an unruly hive I invariably try to get my face as near the bees as possible; in fact, I take shelter within the range of indistinct vision.

The jaws or mandibles are the tools with which the bee does all its building. They can be used as pincers, scissors, trowel, &c. according to necessity. From between them issues the tongue or trunk, by which the bee laps up its honey or collects pollen from the flowers. In the thorax we find several segments, three of which have each a pair of legs and two each a pair of wings. The legs are furnished at their extremities with suckers for use while moving on a smooth surface, and with claws for use on a rough one. By means of these claws the bees hold on to each other in clustering, and they also serve as hands to convey the wax scales from their abdomen to their mouth, or for carrying dead bees or debris out of the hive. The wings are furnished with hooks so contrived that when in flight those on one side are joined as one, but when at rest the one is folded over the other.

The abdomen consists of six segments or rings containing within it the digestive organs, the ovaries, the sting, and the wax pockets with their membranes, which secrete the wax much as milk is secreted in the higher animal. Throughout the body runs a series of air-vessels minutely ramified. The bee does not breathe by its mouth, but through rows of holes called spiracles in its sides. These air-vessels are in close connection with the one blood-vessel which runs through the whole length of the body. In animals possessed of lungs the blood is carried by the action of a heart to the air, in the bee the air is carried to the blood. The wisdom of such a system of respiration is seen when we consider that the mouth of the bee is, as it were, fully occupied by the almost constant action of the mandibles and the tongue, and is frequently filled with wax in process of mastication. When a bee is at work in a cell, or when resting there as it does during winter, its body so completely fills the cavity that if breathed through the mouth it would in a short time perish from suffocation; as it is its head may be entirely cut off from communication with the air and yet it breathes freely. The blood-vessel referred to lies close to a well-developed spinal column, having a well-developed brain, and ramifications by nerves to the extremities of the various organs. Almost each of these organs might form the subject of a long paper, they are all so admirably adapted to the end for which they were intended. We shall, however, only notice two more particularly, the ovaries and the sting.

The ovaries in a normal worker bee have been already stated to exist in a mere rudimentary form. In what is called a fertile worker they are slightly developed and produce a limited number of eggs. These eggs hatch into drones only. To bee-keepers the existence of these fertile workers is a great nuisance. They receive

all the homage due to legitimate queens, while they fail to fulfil their functions; they are, therefore, difficult to get rid of. The bees will not accept a new queen where these are present, and they cannot be destroyed, as they are indistinguishable from the other workers. I have twice kept on queenless stocks that had developed fertile workers until they dwindled to a dozen or two of bees, and though I have scrutinised every bee that remained I could not positively fix on one as the layer of the eggs that were always found in the cells.

Virgin queens frequently, from defective wings, unseasonable weather, or the want of drones, will commence egg-laying. In their case as in that of the fertile workers these eggs hatch into drones only; their ovaries are, however, in a much better state of development, and they are capable of producing a larger number of eggs. In their case it is found on dissection that the spermatheca, a little sac communicating with the oviduct, is destitute of the living filaments which mark the presence of the fluid from the male. In the case of fertile queens the spermatheca is filled with this fluid, which fertilises the eggs as they pass its mouth, and by so doing changes their sex from male to female. This contact appears to take place at the will of the queen. The ovaries of a good fertile queen become enormously developed, and are capable of producing at least from two thousand to three thousand eggs a day during the breeding season. The queen once fertilised continues so for life, or until the contents of the spermatheca are exhausted, which is sometimes the case in a year or less, but generally from three to four years. There is no fact in the natural history of the bee of more practical importance than this in regard to the fertilisation of queens.

The sting is popularly the most important thing to be considered in dealing with bees: all know how formidable a weapon it is. Sharper than the finest needle, barbed like an arrow head, both hollowed and grooved to allow the poison to flow along into the wound, and possessing vitality enough within itself to enable it to work its way deeper even after separated from the bee, it is really a formidable weapon. To the sting, as found in the wound, there is usually attached the poison sac, and frequently a portion of the intestines of the bee. To bee-keepers it is important to know that there is no remedy for a sting like prompt action in removing it; it takes some seconds to work its way deep enough to reach the flesh and insert its poison. Before this takes place, or to any great extent, it is quite possible to have the sting extracted. Care should be taken in doing so not to press the poison bag and thus aid the injection of the fluid. The sting should be scraped off with a knife or finger-nail, and if this be done promptly little effect will be felt.

Hitherto we have been mainly devoting our attention to the typical worker bee. Of course the drone has also all organs of locomotion, digestion, respiration, and sensation. He is the male bee, and we leave him to point out a few special features of the organisation of the queen. Although she may have been raised from an egg or even a grub that was originally destined for a worker, yet by being reared in a cell of different shape and position, and fed on a different food, she issues a perfect insect five days before any of the eggs laid at the same time develop into worker bees. Then how different she is from these sisters. She is quiet and dignified in action, a third longer in body, has a differently shaped tongue and mandibles, is destitute of wax pockets or pollen baskets, has a curved sting, has neither the building nor gathering instinct, and is content to remain at home while her sisters roam the fields. No Arabian tales can surpass the real marvel here to be seen. By natural means, hidden from us, a change is produced on a living organism that is more like the fabled results of the enchanter's wand. How becoming it seems that this marvellous creature should henceforth be an object of devoted attention on the part of the other bees. Though she is utterly helpless to provide herself with home, or shelter, or food, yet her every want is devotedly supplied. Her attendants caress her with affection, brush down her body, clear for her a pathway, supply her with food digested in their own stomachs to save hers the toil, take charge of the eggs she lays, defend her against hostile attack by forming a shield of their own bodies, and mourn her decease with a bitter mourning. She lives for them, they for her. See here the stamp of Divine order, each the unselfish attendant the common want.—WILLIAM RAITT.

NON-SWARMING.

ON reading that excellent paper on the non-swarming system by Mr. Raitt I feel induced to give my experience of the same thing in this warm climate. On taking one of my strongest swarms to test the same principle of obtaining the greatest amount of honey without swarming I took away the queen to make another artificial swarm, also taking care to return on the third and fourth day to take away any royal cells that were formed, and to put the hive past the time of forming them from any eggs of the dethroned queen, with a view to trying their powers of working in storing honey at the height of the season. The result was far beyond my warmest expectations. I took from that one swarm in virgin comb honey about 60 lbs., and after

the first week the bees seemed to work away as usual, with this exception—that they showed more of their fighting propensity when I took away their honey. I should like to hear of this being tried with others, as I think it is the key to the whole system of non-swarming management.—HOLT HOLT, Queensland.

OUR LETTER BOX.

LANGSHAN FOWLS (*N. E.*).—We have never been able to obtain any definite standard of points desired in the Langshan fowl from its admirers. Its colour should be black with as much green gloss as possible, its carriage tall and bold. As we have never kept the breed we cannot give our experience of the average weight of good specimens; we should think the cocks we have seen weigh from 9 to 10 lbs., the hens from 7 to 8 lbs.

DISEASED FOWLS (*T. W.*).—Keep them under shelter, and mix their soft food with ale until milder weather arrives.

ZINC FEEDING STAGES INJURIOUS (*R. S., Dublin*).—If syrup be made by boiling cane sugar in water acidulated slightly with vinegar, and then given to bees over a perforated zinc stage, minute quantities of zinc would be formed; and further, if the vinegar contain sulphuric acid sulphate of zinc will also be produced, but the acids will be present in very small quantity, while the insipid character of the syrup will much interrupt chemical action upon the zinc, so that practically the damage is nil. Zinc stages have been used in our apiary for years without any traceable diminution in thickness or increase in size of hole; yet unquestionably vulcanite is a better substance for stages, it is non-conductor of heat and is untouched by acids.

TAPER FRAMES (*Idem*).—A steady hand generally finds rectangular frames as convenient as taper frames, while any departure from right angles is troublesome to the carpenter.

AIR SPACES IN HIVES (*Idem*).—We think chaff in the air space of hives an advantage. Air is a splendid non-conductor, and the chaff assists simply because it causes the air to remain still. Without the chaff it constantly circulates, rising on the side next the bees, and falling where touching the outer case, and so by convection acting as a distributor of heat. This is matter of theory only with us, since we have not made any test experiments to prove or disprove the position assumed. Carbolic acid in the air space would no doubt prevent the development of mycelium, and so preserve the wood, but its penetrating odour is most disagreeable to bees, so that care would be necessary in using it.

SALICYLIC ACID AS A PROPHYLACTIC (*Idem*).—Salicylic acid we should recommend for use as a prophylactic when foul brood exists in the neighbourhood, or when any stock in the apiary is infected. The quantity then might be about two grains of the acid to each pound of sugar. Symington's pea flour is excellent, but any sweet sample would answer perfectly.

PEA FLOUR AS ARTIFICIAL POLLEN (*W. D.*).—The pea flour sold in packets will be found suitable for use according to the method discovered by Mr. Cheahire. He, however, says that it is much more cheaply bought by weight. It is obtainable of good quality at 4d. per lb. It may be readily mixed with syrup with a common dinner knife.

STRAIGHTENING COMBS IN A HUBER LEAP HIVE (*Idem*).—If any live requires guides it is the one you have used, and your omission has rendered the structure of it valueless. The combs cannot be straightened by any but an experienced person until they have become tough by being bred in, nor would it be safe in any case to attempt it until the weather is sufficiently warm to admit of free exposure without damage. We should advise, since your knowledge of these matters does not seem extensive, that you attend an apicultural show where transferring is always performed before the visitors, and seeing the operation will help you more than any possible explanation.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.						Rain.
	Baromet- er at 3 ^d and Sea Level	Hygrome- ter.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature.				
		Dry.	Wet.			Max.	Min.	In sun.	On grass.			
1880.	Inches.	deg.	deg.	N.E.	deg.	deg.	deg.	deg.	deg.	In.		
Jan.												
Sun. 11	30.562	36.0	34.5	N.E.	36.4	38.9	33.4	40.8	33.4	—		
Mo. 12	30.597	34.0	32.8	S.E.	36.0	38.4	29.6	46.4	22.9	0.080		
Tu. 13	30.584	31.6	31.8	E.	35.8	34.3	30.5	38.0	27.3	—		
We. 14	30.544	30.5	29.3	N.	35.0	34.3	29.4	34.5	29.7	—		
Th. 15	30.812	32.3	31.6	W.	34.9	36.0	29.3	35.3	29.2	0.059		
Fri. 16	30.081	36.6	36.5	S.W.	34.7	39.1	31.2	40.6	27.0	0.157		
Sat. 17	30.075	36.1	35.0	N.	35.4	38.0	32.3	33.6	29.1	—		
Means.	30.555	33.4	32.7		35.4	36.7	30.8	47.0	28.5	0.276		

REMARKS.

- 11th.—Fine dry day, but no sunshine or fog.
 12th.—Fair and dry all day.
 13th.—Dull dark morning, snow shower at 1 P.M.; fine afternoon; snow again in evening.
 14th.—Fine but dull and cold.
 15th.—Very fine morning, bright sunshine at noon; snow in evening about an inch deep.
 16th.—Dull and damp, thaw, steady small rain, snow all gone.
 17th.—Fair with bright sunshine from 11 A.M., overcast but still fair rest of the day.
 A cold and rather dull week but no very low temperatures, the minimum in shade being 29.2°.—G. J. SYMONS.

COVENT GARDEN MARKET.—JANUARY 21.

WE have no alteration to quote this week, except that outdoor goods are short again, owing to the return of the frost. Trade quiet.

WEEKLY CALENDAR.

Day of Month		Day of Week	JAN. 29—FEB. 4, 1880.	Average Temperature near London.			Sun Rises.		Sun Sets.	Moon Rises.	Moon Sets.	Moon's Age.	Clock before Sun.	Day of Year.				
Day.		Night.	Mean.	h.	m.	h.	m.	h.	m.	h.	m.	Days.	m.	a.				
29	TH	Royal Society at 8.30 P.M.		45.6	31.5	38.5	7	46	4	41	7	37	8	12	18	13	19	29
30	F			44.7	32.3	38.5	7	44	4	42	8	54	8	28	19	13	29	30
31	S	Hugh Falconer died, 1865, æt. 55.		44.9	30.9	37.9	7	43	4	44	10	12	8	44	20	13	29	31
1	SUN	SEXTAGESIMA.		44.4	32.0	38.2	7	42	4	46	11 a 33	9	2	21	13	47	32	
2	M	Dr. John Lindley born, 1799.		44.6	31.5	38.0	7	40	4	48	morn.	9	22	22	13	55	33	
3	TU	Theodore Hartweg died, 1871.		45.0	30.7	37.9	7	38	4	50	0	55	9	47	(	14	2	34
4	W	Society of Arts at 8 P.M.		45.0	32.8	38.9	7	37	4	51	2	13	10	20	24	14	8	35
From observations taken near London during forty-three years, the average day temperature of the week is 44.9°; and its night temperature 31.6°.																		

From observations taken near London during forty-three years, the average day temperature of the week is 44.9°; and its night temperature 31.6°.

THE WOODS IN WINTER.



It is a calm bright afternoon, and I can hardly believe that yesterday I was buried in a dismal fog in London, as the winter sun is beaming on us, diffusing its cheering golden light. Ah! now is the time to see our woods. I do not know that even in summer you have a more lovely scene. The foliage is then so dense that we cannot get the views we do now. The air is in the minor key to-day, while in summer it is generally in the jubilant major. But what charms the minor has! how pathetic, how pleading, how sad!

Raff, the great modern German composer, has lately written a symphony which he calls "Spring's Approach." The opening is so beautiful and yet so sad, that it well describes the scenery of to-day. There is a low pianissimo murmuring of the cello and bass strings, representing the stillness and dead-like quiet of Nature. After a time a motive is given to the horn, which like the murmuring of a soft breeze seems to call upon Nature to awaken. The first and second violins join the murmur now, which slowly increases in volume as Nature responds to the call of spring. Then a bassoon joins in and gives a short call to the zephyrs which respond in the strings, then a clarinet adds the voice of some love bird; lastly, the flute gives a trill as joyous and light as a skylark's, and all Nature responds, and with a bound we have spring.

So to-day there is not a sound in the air. The trees are as still as if carved in marble; the very reeds down by the stream do not move; the birds are all in winter quarters. The Hollies are laden with fruit, but no leaf rustles, no fruit is touched. All Nature is asleep, but over all the sun sheds his glowing beams, and the woods seem more lovely than ever I remember. Tints! summer tints, spring tints, autumn tints, all superior to these? Are they, my friends? Surely not, if you will stand with me here on this rising ground and look around. Why, we have a very harmony in silver. Stand with your back to the sun and gaze down that slope, and then let your eyes range across the water up that rising ground, and tell me, do you not see tints that in their refined and sober beauty enchant you as much as do all the varied glories of summer? You see all those old Oaks: look at their trunks as the sun lights them up. Surely they are frosted with silver, and those moss or lichen spots look now like dead gold. How well they serve to remind us of good old age—of men well down in the vale of years, whose locks are tinged with silver; and yet to them as to these Oaks those silver lines form indeed a crown of glory.

All up that slope as far as the eye can range are those noble trees, their trunks standing out conspicuous like silver lamps in a dark night, some bearing on them a wreath of Ivy. And what a contrast do those Holly bushes afford! You seem to wonder if Nature intended them to serve as a frame or as a guard to those monarchs of the forest—deep green, at times almost black, with scarlet berries lighting up their gloom and setting it off, like the scarlet mantilla

of some dark Spanish beauty. And here, what is this cloud of lighter green which envelopes so closely yonder Holly that it seems to grow out of it, as indeed it does? It is too light for any common Holly; what can it be? It is the tree Ivy, which has wedded herself to the Holly, and, like too many wives, has refused to accept a subordinate position, but has become indeed the ruling spirit, causing the poor Holly to hide his diminished head, comforting himself with the thought at least of the lovely contrast his leaves afford. Tints, my friends! Why, in greens alone I can show you half a dozen! Here we have a Scotch Fir which has a tint peculiar to itself; you may describe it as a green dashed with blue. Then there is the medium-coloured Blackberry, which clothes the ground with its dull green brambles at this season, and the Spruce. Among the lighter greens we have the Ivy and the Gorse, and among the darker shades the Holly and the Yew. Perhaps you prefer greys. Well, look at those Birches; contrast their almost snow-white trunks with the grey Oaks. Look again at these fainter-coloured but still greyish Hazels, and then turn your eye to another shade afforded by the Alders. And now do you want a tinge of warmth, a shade of colour—just a hint of red? Turn your eye to the bottom of that hill; see that mass of Birches. Every twig, every branch, is tinged with puce or purplish red. I cannot describe the exact shade; but how warm it looks in the wintry landscape! "Never touch a Birch," says the owner to the woodman; and well indeed may he give this order, for more lovely trees do not exist, particularly in the winter season.

Now you would perhaps like to see some rich browns. Well, I can show you these. You see those sapling Oaks; they have not shed their leaves. Look at their rich colour as the sun lights them up—they are like bronzed gold. And the Bracken at your feet, see what a fine brown it now is. Deeper and less yellow than the Oak it is, but, as each frond bears a suspicion of frost, if anything still more beautiful. And here at our feet are all the varied shades of brighter browns, from the faintest straw of the dried grass to the brown of the Bracken. Go where you will you will see tints; neutral indeed they are, but still lovely.

While we are looking at all this loveliness in decay there is a loud whirring of wings, and a wood pigeon bursts forth from the trees over our head, frantically beating the air with its wings as it scurries off to a distant part of the wood; but as it flashes past us it gives us another and a most lovely tint—the softest blue and grey combined. We only wanted that to make the scene perfect. While we gaze we take our way down to the water, and as we near it a woodcock gets up as silently as the other bird was noisy. Not a sound is heard; the very air seems scarcely moved by that bird's swift flight, but before we have time to mark its course it is out of sight. And now we are at the brook, which dances so gaily along in the sunshine. As we listen to its music we seem to hear a hundred various tunes: as we grasp one the rhythm is changed, but the sweetness is ever the same.

The picture is indeed perfect; and just as we wonder if we can ever leave it the sun retreats behind a bank of clouds, and the whole landscape seems to have received a

chill. The bright lights all fade away. The Oaks that gleamed like silver are now of a cold greenish grey colour. A shudder passes over you, and you turn your feet homewards. It may be seasonable, but it is too like the fleeting grandeur of the transformation scene of some pantomime which is now delighting our children in town. Here are the realms of silver, with the jewelled flowers and lamps of gold. Just as our eyes are feasting on them the lime light dies away, the fairies disappear, and the clown leaps on the stage.—WYLD SAVAGE.

THE SPRING GARDEN.

LITTLE heads of Snowdrops and Crocuses peeping up here and there by the gnarled roots of the tall Plane trees, or sheltered close under a garden wall, remind us that the time is not far distant when once more the beds and borders will be gay with bright spring flowers. Already streaks of white are pushing through the Snowdrop buds; and though the Crocuses are not quite so forward, yet I fully expect, if this weather continues, to see little knobs of gold protruding through the stiff grass-like foliage in the course of a week or ten days. After that a few days of mild weather work wonders, and the bees, if they do not suffer from their temerity, will rejoice in gathering pollen from the open flowers.

Notwithstanding the very severe frost in December everything is looking well so far in the spring garden. My plan is to dig the ground well when the summer bedders are taken out, to trench in a quantity of well-decayed manure, and then to set to work at once to arrange the plan for the ensuing spring. My favourite flower for early work is the Pansy. If the winter is at all mild stray flowers can be gathered from time to time through the whole season, and frequently they are as large and fine as in the warmer days of March and April. At this moment there are some beautiful large Pansies of the old Cliveden Blue in flower near a wall, while the double Daisies and other spring bedders are by no means disposed to put forth even a bud in anticipation of what is to be. The great difficulty with Pansies is their summer treatment. They must be taken up in May to make room for the summer flowers which are then put out, and they have to submit to being placed away wherever space can be found for them. Those who have unlimited room can of course accommodate their spring plants during the summer with such a situation as they require; but my space is limited, and the factotum grudges the room in the kitchen garden which the spring bedders necessarily require, consequently they suffer more or less, but with care they may be kept almost anywhere. The Pansies are generally placed near the Seakale or amongst the Gooseberry bushes, but the latter is not a good place; a little shade is not injurious in the height of summer, but it is certainly better to avoid crowding. Nevertheless, those who cannot find any other corner for their Pansies in the summer can have them very good if they are carefully stowed away even among the fruit trees. It is much easier to find a place for the Daisies. Long lines of them just inside the edge of the borders in the kitchen garden are not much in the way of anything, and they grow well there, and will make fine plants for the autumn bedding.

One of the best plants of all for the spring in this neighbourhood is the Pyrethrum Golden Feather; it is never half so beautiful in the summer from the seed sown the same year as it is in spring from plants which have been preserved during the winter. They very rarely die; if they do, it is not frost but snow which proves fatal to them. But I have only lost my plants of Golden Feather one winter since I have used them, and that is now many years. They make a great show in April and early May, and form a beautiful border to the Cliveden Blue Pansy. The yellow is more intense, and the plant altogether more graceful than those at any other season of the year.

Wallflowers are favourites with everyone. I find the right time to sow them is in April, and they must be transplanted as soon as they are about 4 or 5 inches high. This too requires room, but Wallflowers are worth it for their scent, which is so delicious, as well as for their old associations. I find that the various colours generally come true, and contrast well with each other. Canary yellow is specially beautiful, and the dark red makes a fine background for it. This year the stock of Wallflowers is looking remarkably well; the plants are strong and stubby, and promise abundance of their lovely blooms. I tried a variety called "Harbinger," which according to the wonderful description in the seed catalogues was to surpass

all other kinds in blooming before any known Wallflower. I was careful to give it every chance of distinguishing itself, but alas! my "Harbinger" came in last instead of first. The Tortoise, represented by the old-fashioned variety, decidedly won the day.

Most if not all the plants used for spring bedding are old plants known to our great grandfathers, though perhaps they are arranged in a fashion which our wiser ancestors knew nothing about. I am half afraid that it is an insult to them to put them in rings, and ovals, and formal shapes; but after all the effect is pretty, and no other plan could make the spring garden so bright and gay. It is something to find that they were all known to Thompson, who no doubt thoroughly enjoyed both their beauty and their fragrance, and their happy anticipation of the coming summer.

"Along these blushing borders, bright with dew,
And in yon mingled wilderness of flowers,
Fair-handed Spring unbosoms every grace:
Throws out the Snowdrop and the Crocus frill,
The Daisy, Primrose, Violet darkly blue,
And Polyanthus of unnumbered dyes;
The yellow Wallflower, stained with iron brown,
And lavish Stock that scents the garden round.
From the soft wing of vernal breezes shed
Anemones; Auriculas enriched
With shining meal o'er all their velvet leaves,
And pile Ranunculus of glowing red."

—A GLOUCESTERSHIRE PARSON.

LATE GRAPES.

It is a mistake that late-keeping Grapes such as Alicante and Lady Downe's Seedling should be allowed to start into growth naturally with a view to late keeping. I have had Grapes of the above-named varieties ripe in July and August, and I have kept them till April in good condition long after the same varieties in late houses had been used. It is not necessary that the bunches should remain on the Vines to interfere with the pruning. I have had no difficulty in keeping them fresh and plump in bottles of water until April. They keep best in a cool dry room with a north or easterly aspect. I feel no hesitation in saying that Grapes will keep better under the conditions described than they would on the Vines. I have found nothing to answer better than soda water bottles, with a piece of wire or string tied round the neck. In cutting Grapes for this purpose I always leave plenty of wood. If there is a cross beam in the room, all that is required is to drive in a few nails to hang the bottles on. The bunches need only just hang clear of the necks of the bottles, the weight of the former will balance the bottles. This plan is so simple that it must commend itself to all who have Grapes to bottle.—G. R. ALLIS.

ROSES AND THE FROST.

I FEAR, judging from Mr. Paul's letter on page 56, that what I wrote about Roses still retaining their leaves may have been construed into a meaning that I certainly had no idea of, and in justice to him I must distinctly disclaim any intention of stating anything that would lead to the inference that the Rose trees at Waltham were generally indifferently ripened or injured by frost. Indeed, I should be the last person to say a word in disparagement of his Rose or any other trees, and I regret exceedingly if my letter should have led anyone to believe that his stock of Rose trees was not in a perfectly healthy and sound condition. What I intended to convey was, that those branches on which the leaves were still hanging—and I took them to be only exceptional—were unripe, and would for that reason be unable to resist severe frost notwithstanding the leaves. Mr. Paul has evidently taken my remarks to refer to his Rose trees generally, whereas I in reality intended them to apply to those shoots only bearing leaves. I can assure Mr. Paul I am very pleased to see him state that the Rose trees at Waltham are not injured by frost. I wish I could say the same of those in this neighbourhood.

Now, as to the protection afforded by the leaves. No doubt where Roses are planted thickly and the leaves plentiful they would afford some protection, but in those cases where Rose trees are planted out permanently, and consequently rather wide apart, I cannot see they would be of much service. I have just made a careful inspection of those in this locality, and I find I am fully supported by facts. Nearly all are killed down to the snow line, though they still retain their leaves, and had there been the same amount of cold at Waltham as was experienced in other parts of the country I have no doubt M.

Paul's Roses would have suffered too. Of course Rose trees vary a great deal in hardiness, some varieties being perfectly hardy, others only partially so, whilst others again are tender. Now, in all these cases, in looking over some thousands of plants I cannot see that the leaves have protected them in the least. Whole rows, one hundred in a row, that do not appear to have shed scarcely a leaf, are killed down to the snow in every case. The Editors of the Journal say the ample foliage must have afforded material protection. "Facts are stubborn things," and I hope they will pardon me for saying their opinion is not borne out by facts, at least as regards this neighbourhood.

I am quite prepared to admit that a slight protection is sufficient for Rose trees, but may not the taking-up and laying-in of those Mr. Paul mentions have had a share in their protection as well as the Beech tree? I have found that Rose trees taken up and laid in have been uninjured, whilst other left unmoved have been killed.—F. BOYES, *Beccrey*.

[We did not refer to Roses in Yorkshire, but to beds of dwarf Roses in the south, and those plants having foliage we saw so completely covered with snow that they certainly must have received material protection; where the foliage was absent the snow did not cover the plants nearly so thickly.—EDS.]

PEAR CITRON DES CARMES.

THIS variety I consider should be in every collection where early summer Pears are appreciated. It ripens about the end of July or beginning of August, but continues in good condition only a few days after it is ripe. Its season, however, may be prolonged by gathering the crops at intervals of a few days. The fruit is only what I term a third-size Pear. The skin is very smooth and thin, of a very pale yellow slightly tinged with red next the sun; flesh white, very juicy and sweet, and possessing a most agreeable flavour.

The trees we have here are grafted on the Quince stock and grown as espaliers; they grow freely and bear abundantly every year. The tree I find produces larger fruit when on the Quince, and it does not make such vigorous growth as when on the Pear. Taking into consideration all its merits, it is the best early summer Pear that I am acquainted with. The soil our trees are growing in is a very stiff loamy clay, the subsoil a very stiff clay. The trees grow freely, bear abundantly, the fruit being beautiful and clear. Root-pruning I have never had occasion to practise here, as the trees bear so freely, and with careful pruning and training I find no difficulty in keeping them in proper form.—G. H. G., *Hollanden, Tonbridge*.

NOTES ON AURICULAS.

I HAD hoped when I wrote respecting the Auricula on pages 5 and 31 that there was no possibility of my plain statements being controverted. In my early days, living in the midst of more than nine-tenths of the growers, I was almost daily in their locality, and it was my delight to hear how everything had been carried on in bygone days. Several of the old growers were far advanced in years—some a little above ninety years old, and the majority above seventy—and it is not a little remarkable that most of them were tutored by their parents. We could therefore talk about the varieties and methods of cultivation for nearly 160 years back! My particular friend was John Taylor, who was upwards of ninety years old, and he exhibited Auriculas when only eight years of age. A few of the varieties then grown are not known now. The oldest now known are Kenyon's Ringleader and Grime's Privateer; and, if my memory serves me right, Lee's Bright Venus, a white-edged variety, was one in existence at that time. I have some recollection that Taylor's Glory was also one.

John Taylor and some of his contemporaries used a very strong compost for Auriculas, and the practice is still continued, although I never was an advocate of their method. All plants require a compost similar to what they had been nurtured in in their native habitats. The Auricula, too, being originally grown on the Alps, which is a mountainous range in Switzerland, would not enjoy a warm climate. The system of over-nursing Auriculas has a tendency to make them semi-hardy. The only danger to the plants is too much moisture, and by having glazed lights to protect them everything could be done to keep them from injury. Plain decayed turf from a pasture field of a light sandy nature, and if not rich enough a little addition of thoroughly decomposed cow dung and horse dung, form a compost best calculated to keep the plants strong

and healthy. Some growers who used extremely stimulating composts could not readily sell their plants, as they could scarcely be kept in a healthy condition. I always grew my large stock chiefly in what we called maiden soil, and by that means there were few diseased plants to be seen. There is a strict analogy between plants and ourselves. We find that men who are addicted to strong drink are not healthy nor seldom live to an old age; on the other hand, those who lead temperate lives become strong and their lives are prolonged. I remember once inspecting a collection of strongly grown plants with an old friend—Mr. Charles Turner. The grower of them was a great exhibitor, and at the entrance of his garden was a large tub filled with strong liquid manure. Mr. Turner soon discovered that the plants did not like this stimulant, for although they looked strong they were anything but healthy.

I fear Mr. Horner has not read my remarks correctly. I never was an advocate for the strong compost in use in Lancashire from the earliest period. It is well known that most growers have ideas of their own, but after all they must of necessity follow out fundamental rules. Over-attention, and nursing naturally makes all plants tender, just as the children of cottagers are much more hardy than those of the higher classes. Some years ago Mr. Groom introduced the Lilies, and a greenhouse was their locality, but in a few years they were grown in the open garden equally as well as previously. If Auriculas are grown for exhibition they will require a greater amount of care so that the bloom may not be damaged, but this does not prove they are not hardy. All plants, when exposed are more or less injured by adverse weather, and consequently Auriculas are protected so as to secure a fine bloom. Mr. Horner remembers his father's collection when residing at Hull, and I have no doubt the plants were grown far differently than they were by the old Lancashire weavers, whose education was necessarily limited. They were only taught to grow the plants by assisting their parents, but now they witness the great advance in the cultivation of all plants, and consequently they profit to some extent by observing at our exhibitions a decided change almost in everything.

N.B.—In treating on potting I omitted saying that the tap root of the Auricula must be pruned when the plants are repotted.—JOHN SLATER.

NOTES FROM MY GARDEN IN 1879.

AS I have been in the habit of late years of recording my experience in the little plot which I cultivate I must not, even although the season has been the most disastrous one I ever recollect, omit it. We talk and write of abnormal seasons, but this was doubly abnormal if there can be such a thing. The whole range of products—fruit, flowers, and vegetables, shared in the calamity. No Pears or Apples; while Peaches and Nectarines, that ought to have been ripe in September, remained on the trees until November, and were good neither for eating nor preserving. Not a Plum in the garden, the only redeeming feature being the small fruits. Gooseberries, Currants, and Strawberries were abundant; lacking, indeed, much of the flavour of many years, but still very grateful in the general scarcity. Strawberries especially were a most abundant crop. Then, when we come to write about vegetables, what a terrible havoc the season wrought in them! Peas were a complete failure with me. After the early crop was gathered I did not obtain from any of my rows much more than the seed I put into the ground. French Beans, again, of which I had a large breadth planted, were a failure; and as the Strawberries redeemed the fruit crop, so Onions did the vegetables: it was the only vegetable that with me really did well. Then what misery it was to attempt to grow Vegetable Marrows or Ridge Cucumbers! Over and over again they were planted, but they obstinately refused to grow, and at last had to be abandoned in despair. Potatoes, too, were a miserable failure: half the crop diseased, and the other half so small as certainly not to deserve the name of table Potatoes. Vegetables, too, which we are apt to consider as delighting in wet, such as Turnips, seemed to have too much of it; and altogether it was a disappointing time for the vegetarian. There was one crop which I must do it the justice to say made the most of its opportunities, and that was the slug and snail crop. Never have I seen them in such swarms. No treatment was of the slightest use. We applied soot and lime, laid heaps of sawdust and bran—did everything that we saw recommended. The rains washed away the soot and lime and the sawdust was despised. Then we tried

to trap them, hunted for them at night. We caught and caught them; but the cry was, Still they come. They devoured everything—Lettuces, Cabbage plants, Gladiolus leaves, Carnations—everything, in fact, but weeds they carried off. And oh! how the weeds did grow! The ground was too wet to get on it. It was no use using the hoe unless the weeds were carried away, and so altogether they had a good time of it and seemed as if they knew it; as the foxes must have rejoiced in the long spell of frost, and thought it was specially sent for their benefit.

And what about the flowers? Well, they, too, were disappointing, as everyone knows. Happily I do not do anything in bedding-out, but anything more woebegone than most of the gardens that I have seen this year cannot be imagined. What with *Alternantheras* and other plants that would not grow, and *Geraniums* and flowering plants that would grow and not bloom, I can quite understand that it should have been said, "Happy was the man that had not a garden." Not so, however. There was still enjoyment to be had; and hope, "that springs eternal in the human breast," led me to hope for better times, and to come to the comforting conclusion that we should never have so bad a season again for many a year. I have already written on Roses, and alluded to my own in so doing. I fear that the closing weeks of the year will, however, have left their mark on our Rose beds. Plants that were at all wavering have succumbed, and many of which I thought well have gone also. I hear from many quarters, more especially from the midlands, sad tales of losses, and fear that when the winter is over there will be many to be reported missing. My fine plant of Cloth of Gold is, I am afraid, most severely injured if not altogether ruined, but *Rêve d'Or* seems to have withstood all the severe weather, although on an eastern aspect. And now as to the other florists' flowers which I endeavour to cultivate or to grow as the case may be.

I have so often told my melancholy tale about my Auriculas that it is useless to repeat it. I find that persons who have had the infliction of the woolly aphid speak in most respectful terms of its devastating powers, while those who have never had it treat it very lightly. I have tried according to Mr. Elwelyn's advice paraffin, and while it certainly kills the aphid it does not injure the plant; but I find that it is just possible the plant may be attacked again. The manner in which the insect is enveloped by its downy covering gives it great facilities for travelling about, while it seems to be abundant on the roots of Lettuces, Sowthistles, and other plants: hence one must live in continual dread of it. Somehow or other, notwithstanding all that has been said and written, it does not seem that Auriculas are so easily managed as some people imagine. The National Auricula Society has now for three years held its exhibitions, and they have been very successful in bringing together a large number of plants; but I find on referring to their lists that during that time but one new exhibitor from the south has entered the lists, and that the exhibitors are never more than seven or eight. I have started three persons with small collections before I had any attack of woolly aphid. When I meet them and ask about them a shrug of the shoulders is what I am treated to, and a disclaimer as to the difficulty of growing them. It is singular, too, that while many are raising seedlings, as yet so few have been brought forward that can compare with the least of the established varieties; but one edged flower was certificated by the Royal Horticultural Society, and that I think will be found not refined enough for those who are particular in this respect. It will be indeed difficult in grey edges to surpass *George Lightbody* and *Lancashire Hero*. There is a better field in the green and white-edged sections; in the latter John Simonite and Acme seem likely to take a good place. In selfs Mr. Horner has brought forward a seedling which for smoothness and shape is all that can be wished; but we have already so many really fine selfs that it is difficult to beat them, while I believe most raisers of seedlings find that a very large percentage of their plants are selfs. I have for so many years grown the Auricula that it is for one reason or other so identified with all my love of flowers, carries me back so far, that I should be sorry to give it up, but if I have no better success this year with it than I had last I must do so. By-the-by, one curious fact in connection with my Auricula growing has interested me much lately. I received last month a letter from San José in California, in which the writer asks, Do I remember him? and then goes on to say that about five and thirty years ago I and my dear brother were amongst his first customers at Miltown in the county of Dublin. He is now

apparently doing well, and writes to ask me to receive some seedling Pears which he has been raising and which he wishes me to bring before some competent authority. Oh! how well do I recollect those days and the enthusiasm with which we used to enter into these things. I perhaps have as great a love for the Auricula now as then, but there is a vast difference between twenty-five and sixty, but it is a pleasant although somewhat melancholy reminder of days that are past to return no more. I have found during the severe weather of the latter part of the year the comfort of having my Auriculas in a pit, while at the same time the plant is much more likely to be free from drip than in frames and can be detected more easily; and then the plants, being below the level of the ground, are not so easily affected by frost; and the comfort of being able to go into the pit and see that all is right, even in very severe weather, is very great.

I must reserve for my next paper notes on Gladioli, Picotees, and Carnations.—D., Deal.

STOCKS—SUBURBAN ROSES.

As a grower of Roses on various stocks I should like to say that your correspondent who last week wrote, "That stock is the best which the soil suits best," put the whole matter in a nutshell. Four miles from St. Paul's I have a piece of rich light garden ground where the Manetti gives capital results, while the Briar barely exists. Two miles farther out I have another garden, scarcely anything but clay for 4 feet down; there Manetti Roses will not live three months, but the Briar, standard, seedling, or cutting, flourishes. To beginners in Rose-growing who are in doubt as to which stock to have I would say, Take up a handful of your soil, press it firmly in your hand so as to make a sort of ball of it, and toss it from you half a dozen yards. If it is so light that it crumbles to pieces on falling upon the path, plant Roses on the Manetti; if it is sufficiently heavy and adhesive to cling together when thrown, try the Briar. For growing near large towns the Manetti is the better stock in nine gardens out of ten.

I am exceedingly glad to see that the proposal to extend the radius for the suburban Roses was negatived. If carried out I believe it would entirely defeat the object for which, I presume, the class was established—viz., the growing of Roses under difficulties. If the radius were extended just two miles it would take in districts that I know of in the Thames and Lea Valleys, and in the northern districts round London, in which, with equally good plants and careful culture, Roses could be produced to compete with the collections sent from Heavitree, The Old Weir, and Causton Manor. I was at the Crystal Palace last year, and was rather surprised to see the first prize awarded to a collection from Teddington or Twickenham, I forget which. Are not both these places more than eight miles from Charing Cross?

Are we to understand that Mr. Oliver's cup is to be for six Teas only, to the exclusion of Noisettes?—A LOVER OF ROSE SHOWS.

VEGETABLES IN 1879.

EVERY year adds a considerable number of so-called novel ties to our already overstocked lists; but many are either very little in advance of the old varieties, or are new in name only. I shall not, for obvious reasons, attempt to point out any of the latter that have come under my observation, but will give a list of varieties which are worthy of a place in most gardens.

In addition to Osborn's Forcing and the Canadian Wonder Kidney Beans, I grew Carter's White Advancer, and found it very useful for late forcing, and also planted with Canadian Wonder in a pit. The pods are long, straight, and of a deep green, the style of growth resembling the Negro Longpod. It has a tendency to run, especially in the open ground. Suttons' Giant White Runner Bean gave an abundance of long handsome pods, particularly fine for exhibition. It was tried with the old White Dutch, from which it was evidently selected, but proved much superior. Carter's Leviathan Broad Bean produced enormous pods from 12 to 13 inches long, the next longest, Seville Longpod, being about 10 inches. Both varieties are somewhat early and rather shy-bearing.

I have tried no variety of Brussels Sprouts that surpassed the Imported either for early or main crops. The new dwarf Green Curled Kale has proved very hardy and good, and the same remark applies to Suttons' new dwarf Purple Curled. The greater part of the Broccoli crop is destroyed by frost,

although widely planted on firm, and in some instances undug ground. A number of plants laid down are also much damaged, but not quite so badly as those left standing. Osborn's Winter White has for the last two seasons proved much harder than its vendors anticipated, and is much prized accordingly. It has very short stems and is not a very luxuriantly growing variety, and I wish there were more like it in those respects. We have several new and apparently distinct varieties, but none resemble Osborn's. Early East Ham, a favourite market variety, was much the earliest Cabbage, and the Heartwell Marrow the best in other respects. Celery did not grow at all freely, especially the earliest and latest planted. We were unprepared for the unusually early and severe frost, and covered up a night too late, so the frost coming upon foliage much damaged by the Celery fly will have the effect of materially shortening the duration of the crop. I consider Williams' Matchless Red the best variety, the next best being Major Clarke's Solid Red and the Leicester Red, which are distinct and are alike good. Cole's Crystal is a good white variety.

The Nantes Horn Carrot is much liked on account of its colour. It grows to a good size and keeps well. The best varieties of Turnip that I have tried are Snowball (Suttons' strain), Veitch's Red Globe, and the Chirk Castle Black Stone sown for early, midseason, and late crops as arranged. The White Stone and Green Round, which no amount of frost appears to injure, are largely grown in this neighbourhood for the markets. Trebons Onion was the only noteworthy new variety of Onion grown. It is globular-shaped, of mild flavour, and when sown with the Tripoli in the autumn grows to a good size and keeps much longer than that variety. We have some at the present time, and the other autumn-sown varieties have long since failed. Osborn's (Dell's Crimson), Suttons' Improved, and Carter's Perfection of Beet are all good in every respect. Little Pixie and King Koffee Savoy are extremely useful little varieties, worthy of a place in large or small gardens. The Dwarf Elm is a good early variety, and I like the Drumhead for the latest supply. I omitted to mention that the Early Purple Sprouting Broccoli is very much damaged by frost in the fields as well as gardens. Suttons' King of the Cauliflowers sown in autumn and wintered in frames formed a good succession to the Early London and Dwarf Erfurt, and is a very useful variety, as also is Carter's Mont Blanc for summer and autumn work. We did not winter any of the latter variety, but have some for this spring. Veitch's Autumn Giant is indispensable. The Musselburgh Leek again proved superior to the Carentan.

Tomatoes on the open walls completely failed. For forcing none surpassed the American varieties on account of their superior shape and solidity. The new small varieties are ornamental, but are otherwise useless—here at all events. The early red and white short-topped Turnip Radishes are the best for forcing, being much earlier than Wood's Frame and the French Breakfast, and the Violet white-tipped olive-shaped is also a good Radish; all I believe are of continental origin. We grew Scott's Superb, Suttons' Superb, Carter's Giant White, and the Alexandra Cos Lettuce, all of which are improvements on the Paris White, and are alike good. The Early Paris Market and Suttons' Forcing Cabbage Lettuce, being very early and well adapted for frame work, are the only two of any real service to us. Suttons' Standwell is rightly named, and will be useful to those who like Cabbage Lettuce; but an American fringed variety distributed under different names, although distinct and ornamental, is comparatively worthless.

The Potato crop, on the whole, was a failure owing to the disease, but the Magnum Bonum and a new unnamed round variety of the same style of growth (received from the Messrs. Suttons) were really "disease-resisters," and gave heavy crops. Prince Arthur (Veitch) yielded a good per-centage of sound tubers, as also did Covent Garden Perfection (Hooper), although the latter is of rather weak growth, the quality of both being very good. Snowflake, Schoolmaster, Woodstock Kidney, Grampian, International, McKinlay's Pride, Waterloo Kidney, Early Rose and other varieties, including Early Bird, were all badly diseased; and Bedford Prolific yielded about half a crop. —W. IGGULDEN.

HYBRID TEA ROSES.

In the lively, clever, and but too accurate account of the meeting on January 13th of the General Committee of the National Rose Society I read at the end, it "was carried by two votes that Hybrid Teas were not to be admitted into Tea boxes."

It is only too true. I voted in the minority, but at the risk of committing treason against a foregone conclusion. Before this becomes a Mede and Persian decision I entreat the other side to consider what we are losing. No more Cheshunt Hybrids to be admitted into Tea Rose boxes! None of those Roses we are all expecting of such high fame from Mr. Bennett! It is all very well to promise Hybrid Teas some day a class of their own, but they will hardly be strong enough for this yet for some time to come. And why should they not be admitted into Tea boxes? Some of the orthodox Teas are coarse enough—far less refined than any of the Hybrid Teas with which I am acquainted. We have none too many exhibition Teas or Noisettes. The wildest schedule never yet schemed a box of twenty-four of them; but if the Hybrid Teas were admitted there would one day be a change of this. I doubt whether they will be able to hold their own with Hybrid Perpetuals; how cruel, then, to leave them thus out in the cold altogether.

I dare hardly hope now to move the heart of "D., Deal," to pity, but surely the proprietor of Cheshunt Hybrid might be expected to exhibit some parental affection. Will not some more powerful pen take up the case of these interesting and oppressed individuals thus cruelly penalised, even while for the most part but looming in the Rose box distance? The National Rose Committee has found its decisions hitherto received with such respectful unanimity that I see no hope if the fatal "footnote" once goes forth "appended to the schedule." But again I ask, Have we, or are we likely ever to have, an overabundance of exhibition Teas and Noisettes? While I write a second winter is recommencing its ravages.—A. C.

STOCKS FOR ROSES—GARDEN ROSES.

THE question is often asked, and as often discussed, as to what is the best stock for Roses. As a parson I suppose your readers will say I stick to my text. I still think the Manetti is the best for ordinary soils. The Briar is good for heavy clays or wet land, or for some of the weaker-growing Roses, and no doubt for some of the Teas the seedling Briar is good. Why my friend Canon Hole is so firm in his faith with regard to the Dog Rose, and even to the standard, is very obvious to me. It is because Causton has a clay soil and suits the Briar; but it is only in certain seasons that this clay soil comes to the fore. I prefer a good garden loam with a deep soil, well drained and well mulched; let the loam be unctuous, but unctuous with humus.

I gave a somewhat long and prosy article in last year's "Rose Book." I have seen no reason to alter my opinion, which is one of about thirty-five years' experience. Cut-back Roses on Manetti, if properly pruned and properly treated in the winter, will give just as good blooms as maidens. I tried them very decidedly last year, and the season was such that every plant I had was killed to the snow line, except some of the younger growths. It seems difficult to account for the fact that old wood suffers from frost more than young wood, but it is evidently the case wherever I have inspected it. I have before now stated my opinion, that the reason why this is so is that the sap of the older wood is injured when frozen by pressure between the harder bark and wood which has less pith.

The Roses on seedling Briars are later invariably in their blooming, and this makes them often show out well at the latter end of the Rose exhibitions, when the more forward Manettis are over. Any persons who take accurate notice, and compare one set of Roses on the Manetti with another on the seedling Briar, will remark this. I noticed it very much when at Manchester for the National Rose Show last July in the garden of a friend at Preston, who took me and "D." of Deal, in (hospitably, not in any other acceptance of the term). His was a good Rose soil, and a first-class soil for Strawberries; the two go together, but his Roses on the seedling Briar were certainly ten days later than those on the Manetti or on their own roots.

While on the Rose subject I cannot help contrasting the judgments on the new Roses. The judgment on the garden varieties is very much in accord with mine, except with regard to Cheshunt Hybrid, the blooming period of which is too limited. I should place Charles Lefebvre and Marie Baumann much higher, because it is only sheer bad management if Marie Baumann does not please everyone, and it is still A1 in point of form and colour. I should also put Abel Grand, Marie Rady, Dr. Andry, Baronne de Maynard (I presume

Boule de Neige is omitted, as some think it identical with the latter) much higher on the list. With regard to the other Roses, I have no faith in Capitaine Christy keeping so high, and can only account for it from the fact that it has been out longer, is more generally known, and that last year, a wet season, was favourable for it in comparison with some others, as Marie Cointet. At Manchester a special prize was given for twelve blooms of Capitaine Christy, where I had to judge, and certainly there was only one really good bloom in the twelve. A. K. Williams, Duke of Connaught, Prince of Teck, Sultan of Zanzibar, Sir Garnet Wolseley, Comtesse de Serenye, Mrs. Baker, Reynolds Hole, Duchesse de Vallombrosa, Madame Lacharme, Marguerite Brasseur, Miss Hassard, Mons. E. Y. Teas, Star of Waltham, Gabriel Tournier, Penelope Mayo, La Rosière, Rev. J. B. M. Camm, Oxonian, Abel Carrière, Empress of India, Mrs. Laxton, Magna Charta, Hippolyte Jamain, Emily Laxton, John Stuart Mill, Constantin Fretiakoff, Madame Prosper Langier, Mabel Morrison, Princess Beatrice, Marquis of Exeter, and Jean Ducher are all in my opinion better, or of some of them it may be said quite as good, as Capitaine Christy.

One of the finest new Roses I saw last year was certainly A. K. Williams, and Le Havre I think was the name of another, but it is not down in the list. I feel sure we have a grand acquisition in A. K. Williams, also in Duke of Connaught, Mrs. Baker, Mons. E. Y. Teas, Prince of Teck, Sultan of Zanzibar, Sir Garnet Wolseley, Constantin Fretiakoff, Magna Charta, and many others that I have in my collection.

At present my predictions are in favour of a fine spring and a good floral season. Hard frost in January with little rain, and with a high barometer as there has been since the Tay disaster, is generally a forerunner of a fine spring; at all events, we may hope that Jupiter Pluvius of last year may not be in the ascendant.—C. P. P.

FIR-TREE OIL FOR INSECTS.

EARLY in September, through the kindness of Mr. Griffiths Hughes of Victoria and Cateaton Streets, Manchester, I received a sample of a new insect-killer called Soluble Fir-tree Oil, and as there have been so many faulty compounds brought forward lately for destroying our insect pests I was not at all enthusiastic about the matter. However, I could not honestly say the new mixture was no better than its predecessors till I had tried it, so I applied it to a few plants of no value much stronger than I had been recommended to do, expecting, of course, to see the not unfrequent result of such trials—living insects and dead plants. But as I found exactly the reverse of this, I became slowly convinced that the substance was worth a fair trial, and having obtained fresh supplies I have been carefully experimenting with it at intervals till the present time with the following results:—Half a pint of Fir-tree oil to four gallons of water if applied with a syringe or a vaporiser, will destroy green fly, red spider, the light-coloured green fly on Plum trees, and the black fly which infests Cucumbers and Melons. Double that strength makes a good wash for plant scale if gently rubbed on by means of a piece of sponge or a soft brush, and better than all, it effectually kills the two kinds of Gooseberry caterpillar which have been more trouble to me than all other pests together.

And now, what about injury to the plants? Well, I have used it on the most tender foliage I could find at double the strength necessary to kill any insect with which I am troubled, and in no case have I seen the slightest injury. Three days ago I gave it a very severe trial—viz., on the tender shoot of a forced Rose in the full sun, and the shoot received no injury whatever. This was used at the rate of half a pint to four gallons of water. I have drenched tender flowers such as Tuberoses and Stephanotis with it without the slightest injury. And now, as this is no new thing with me, I feel justified in giving it an unqualified recommendation, as being perfectly safe, and as far as I have tried it perfectly effectual. I have no mealy bug, and therefore can give no personal experience of its action on that terrible pest, but I strongly advise your readers to give it a trial on any insects with which they may be troubled.

Its odour is not unpleasant, it mixes readily with either hot or cold water, has no sediment, and does not require washing off the plants.—WM. TAYLOR.

WILD PLANTS FLOWERING IN CORNWALL.—The following plants were seen in flower near Penzance on December 26th and 27th, 1879:—*Primula vulgaris*, *Tussilago farfara*, *Poten-*

tilla Fragariastrum, *P. reptans*, *P. Tormentilla*, *Viola arvensis*, *Lychnis diurna*, *Lamium purpureum*, *Galeopsis Tetralix*, *Veronica officinalis*, *Holcus lanatus*, *Poa trivialis*, *P. annua*, *Cardamine sylvatica*, *Taraxacum officinale*, *Crepis virens*, *Lepidium Smithii*, *Ranunculus Ficaria*, *R. repens*, *R. hederacea*, *Ulex europæus*, *Bellis perennis*, *Erica Tetralix*, and *Capella Bursa-Pastoris*.—W. ROBERTS.

NOTES AND GLEANINGS.

THE FROST IN THE NEIGHBOURHOOD OF LONDON has been very severe during the week, and dense fogs have prevailed which are so prejudicial to Orchids and many forced flowers. The mercury of the thermometer has ranged from 10° to 15° as the minimum in different gardens, and yesterday the trees, which were unusually thickly covered with frost crystals, presented a beautiful appearance, the Birches resembling fountains of silver that even the facile pen of "WILD SAVAGE," we think, could not adequately describe. The weather is particularly unpropitious for the forcing of Vines and Peaches, and it is not at all surprising that the former, under the best management, are growing weakly, and the latter producing small flowers.

WE learn that an AMATEUR CHRYSANTHEMUM SOCIETY has been recently established in the neighbourhood of Finsbury Park and Hornsey, under the patronage of Sir A. Lusk, Bart., M.P., and S. D. Waddy, Esq., Q.C., M.P. As the district mentioned is an extensive and greatly improving one, the Society will probably not only prove very prosperous but also aid considerably in extending the culture of that valuable autumn-flowering plant the Chrysanthemum. Mr. James Cutbush has been elected President, and the list of Vice-Presidents includes the names of several influential and well-known gentlemen. The schedule of classes for the first exhibition to be held next November has also been issued, accompanied by the rules, which are clear and concise. Seventeen classes are enumerated, providing for the exhibition of plants in pots, and cut flowers of all the principal sections.

OUR Clonmel correspondent writes, "I have to-day been examining some of my stock of TUBEROUS BEGONIAS, the stems and flower stalks of which had died down late in the autumn. I had tried the experiment of placing the pots on wooden shelves indoors, where a temperature not less than 45° is maintained, and the pots were surrounded with moist sand. I have given the plants no water since. The tubers are now apparently thoroughly sound and healthy. I prefer this arrangement to a higher temperature or a moister atmosphere that may induce premature growth."

A VERY useful plant for the greenhouse or conservatory in spring is the old and well known *CANARINA CAMPANULA*, which is worthy of the little attention requisite to obtain it in good condition. The present is a good time to shake out and repot the plants, employing a compost of loam, leaf soil, thoroughly decomposed manure and sand, and allowing the plant plenty of root space and well draining the pots. The temperature of a warm greenhouse or ordinary forcing pit will speedily start the plants into growth, when water should be liberally supplied.

FLOWERS are of great value during December and January, particularly such general favourites as LILIES OF THE VALLEY. These are largely forced for market, and one of the quickest methods adopted is the following. Shallow boxes are filled with leaf soil or cocoa-nut fibre refuse and sand; in these the selected crowns are thickly planted, and the boxes are placed on the pipes beneath the staging in a warm house, and water is freely supplied, care being exercised, however, not to have too much moisture in the atmosphere, and to avoid damping the flowers when they appear. About three weeks are required from the time of starting to obtain flowers by this system.

A CORRESPONDENT informs us, that in a rather exposed position in the west of Ireland *PRIMULA JAPONICA* not only lived out of doors through all last year's frost, but flowered more abundantly in the summer than it had done when protected in a frame; it sowed its own seed, and the seedlings looked vigorous enough, but the damp and sunless autumn was against them, and many appear to have died.

THE same correspondent observes that *CHESHUNT* HYBRID Rose against an east wall seems perfectly hardy. It is a young one, only three years planted, but it did not suffer

last year though unprotected except by cocoa-nut fibre over the roots. In summer, like all the other Roses it made a very unhealthy growth, and the watery shoots have all damped off, but the buds that are now pushing out seem quite firm and healthy.

— A BUNCH of Violets or a basket of the sweet blossom of *CHIMONANTHUS FRAGRANS* is one of the most charming offerings to ladies at Christmas. The Violets were forthcoming; but the *Chimonanthus*, instead of its usual Christmas guise of branches bare of leaves and thickly set with flowers that even in midwinter scent the surrounding air, had a regular faggot of gross shoots still clothed with foliage, and not a flower bud or blossom was there to be seen.

— THE Annual General Meeting of the METEOROLOGICAL SOCIETY was held on Wednesday evening the 21st inst. at the Institution of Civil Engineers, Mr. C. Greaves, President, in the chair. Dr. Tripe read the report of the Council for the year 1879, which showed that the Society was in a very satisfactory condition; eighty-four new Fellows have been elected, and the total number at the end of the year was 473. The great local differences in temperature and humidity require to be more accurately ascertained than they are at present, and this remark applies not only to seaside places, but also to inland districts in their relation to hills and valleys. It is with a view to obtaining better knowledge on this subject that the Council have instituted a new class of stations of a third order, to be termed "Climatological," at which observations of temperature, humidity, cloud, and rainfall are taken daily at 9 A.M. only, with certified instruments, the thermometers being in Stevenson's screens, so that the observations of temperature at the different stations may be strictly comparable. The total receipts for the year were £799 6s. 9d., and the expenditure £621 19s. 5d., leaving a balance in favour of the Society of £177 7s. 4d.

— In the address of the President of the above Society a more attentive inquiry by the students of meteorology into the subject of *HYGROMETRY* was advocated. The appearance and disappearance of moisture, its diffusion, its origin in and withdrawal from the vaporous form were matters which could now be readily defined through the increased supply of good observations, especially those so widely circulated by the Meteorological Office, and those recorded by the observers of the Meteorological Society. In furtherance of this object he produced a digest of all the observations published by the Meteorological Office for the year 1879, a year of abundant moisture, and one which could hardly fail to afford traces of the constancy or inconstancy of beds of moisture if they were permanent anywhere, or of their coming and going viewed substantially as is their own existence, rather than as borne by the force of the wind or acted on by the power of the rain in its baric relations. The preparation of this digest from the hygrometric elements for 1879 proved such a laborious work, that being still incomplete and wanting the customary corrections from the various observatories, he refrained from comments and deductions, and gave the digest itself for the use of any students who might desire to work at the subject.

— THE Summer Show of the CROYDON HORTICULTURAL SOCIETY will be held on June 30th.

— WE have received the ninth part of the *JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY*, which contains particulars of the Society's meetings and exhibitions from April 22nd to August 26th, 1879, a continuation of the report on *Gloxinias* grown at Chiswick, and an interesting paper by H. J. Elwes, Esq., entitled "*Notes on the Genus Tulipa*."

— WE are informed by Messrs. GUTTON & SONS of Reading that they will offer the following prizes at the shows of the Royal Horticultural Society during the present year. At the Great Show they will offer for four dishes of Peas four prizes, varying in amount from £3 3s. to 10s. 6d., and for two Melons five prizes, value from £5 5s. to 10s. 6d. At the Rose Show six prizes, varying in amount from £6 6s. to 10s. 6d., will be offered for collections of vegetables. At the Popular Show five prizes from £2 2s. to 10s. 6d. will be offered for collections of vegetables; and at the Autumn Show five prizes, £5 5s. to 10s. 6d., will be offered for collections of vegetables, three prizes for Onions, and six for Potatoes. Also at the International Potato Exhibition they will offer, in the class for eighteen varieties of Potatoes six prizes, £7 7s. to £1 1s. For a dish of Suttons' Woodstock Potato three prizes, and the same number for a dish of Suttons' Magnum Bonum. The first prize in each of the latter classes will consist of a guinea

and a silver medal, the second of a bronze medal and 15s., and the third prize of half a guinea.

— A CORRESPONDENT informs us that the FROST set in very severe in Cheshire on the 16th after rain, and has done much damage amongst vegetables, especially Broccoli. The mercury fell on the 16th to 6°, on the 17th to 10°, 18th to 12°, 19th to 10°, 20th to 14°, 21st to 20°, 22nd to 23°, 23rd to 18°, 24th to 20°, 25th to 26°, and on the 26th to 20°.

— REFERRING to the CONIFERS AT HAFODUNOS, the seat of Henry R. Sandbach, Esq., in North Wales, Mr. Hugh Fraser states in the *Journal of Forestry* that *Abies Albertiana* grows here with wonderful luxuriance, the largest being nearly 60 feet high; girths of stem, at 3 and 5 feet from the ground, 4 feet and 3 feet 11 inches, and the spread of branches 30 feet in diameter. It is densely clothed with branches from the ground upwards, and is one of the largest and most symmetrical specimens of its kind he has ever seen. *Abies Canadensis*, the Hemlock Spruce, growing in a stiff clay loam, and in floods the roots of some of them are quite covered with water, are from 30 to 40 feet in height, and the girths of one of the largest, at 3 feet and 5 feet from the ground, are 2 feet 8 inches and 2 feet 6 inches. *Abies Douglasii* grows rapidly; one splendid specimen, planted thirty years ago, is about 60 feet high, girthing, at 3 feet and 5 feet from the ground, 6 feet 2 inches and 5 feet 7 inches. It is well clothed with branches, with a spread of 35 feet. *Picea nobilis*, of which there are hundreds throughout the grounds, vary in height from about 35 to 45 feet. *Picea bracteata* one of the finest of the Silver Firs, this tree being one of the original seedlings sent out on its introduction by Messrs. Veitch some twenty years ago, is a noble specimen, growing with wonderful vigour, and well furnished with branches regularly arranged around its arrow-like stem. It stands about 25 feet high, and girths, at 3 feet from the ground, 1 foot 8 inches. *Picea grandis* is fully 30 feet high. *Picea Nordmanniana*, 35 feet high. *Picea pinsapo*, about 40 feet high, girthing at 3 feet from the ground $5\frac{1}{2}$ feet, spread of branches 24 feet in diameter. *Picea Webbiana*, growing on high ground, but sheltered by trees from the full force of the blast, is healthy and vigorous. It was planted twenty-four years ago, and is now about 30 feet high. Several specimens of *Cupressus Lawsoniana* are from 30 to 45 feet high, one of the largest girthing 2 feet 7 inches at 3 feet from the ground. *Thuja gigantea*, 50 feet high, grows with great luxuriance, and forms a bushy conical tree of great beauty. *Pinus cembra* is nearly 50 feet high, *P. rustacea* 50 feet, *P. muricata* 45 feet, and a grand specimen of *P. strobus* 60 feet. *Abies Pattoniana* and *A. Hookeriana*, the one about 8 feet high and the other about 4 feet high, are growing in a sheltered nook side by side. These have been regarded by some authorities as specifically identical. The distinction here, however, is quite obvious, the former having a decided upright tree-like habit of growth, with stiff horizontal branches, while the other has a broad bushy habit, with the branches more upright.

PROTECTING STANDARD FRUIT TREES FROM CATTLE.

DURING the last few years I have adopted a very simple and effective method of protecting young fruit trees standing in a field from the injury caused by cattle rubbing against them. It may not be new to some readers, but I have never seen trees similarly protected, but on the other hand I have noticed many an orchard spoiled in appearance for the want of a little attention, and it cannot be out of place to call attention to my method.

The old and generally adopted plan of tying a bundle of thorns as large as a faggot round each tree I consider a bad one for several reasons. As soon as the thorns become slightly decayed they form an attraction for the cattle to rub their heads and horns against, and the tree being bruised becomes affected by canker, and is eventually stunted or dies outright. The system I have adopted with considerable success is, placing a few of the most formidable Briars of one or two years' robust growth around the trees, two or three round a young tree 1 inch in diameter, and so on up to about half a dozen round trees 6 inches in diameter. Since I have adopted this plan three years ago I have not found one tree touched. If the cattle once try it they will immediately become convinced the Briars are not placed there for their accommodation; but rather than they shall be deprived of the luxury of having

a good scrub I have put in about a yard deep and well rammed in a few stout posts, standing about 4 feet out of the ground, and near the top a couple of pegs run through projecting about 8 inches at each end, similar to a line post; these the cattle appear to fully appreciate. After placing the thorns round the trees they are securely bound with a couple of wires top and bottom, and will last for three years at least. A dressing composed of about equal parts of cow dung and clay mixed in a bucket, and which is diluted with water which has previously stood on gas tar, is rubbed on the tree with a whitewash brush. Perhaps a portion of quicklime would be a useful addition, but that has been omitted because it was not at hand. The odour of this composition is obnoxious to the cattle or rabbits, and



Fig. 13.

is no doubt useful in destroying insects or preventing their attack.

There is no reason why hundreds of acres of rich meadow land of suitable soils in this country should not bear a crop of Apples and Pears as well as grass, and by adopting this simple and efficacious method of protecting the trees in a young state our farmers and landowners might considerably increase the profits.—J. H., *Worcestershire*.

THE HARDINESS OF PRIMULA JAPONICA.

MESSES. C. W. DOD and George Dowker (page 39) courteously refer to a note of mine in reference to the above at page 10, not directly, but seemingly taking exception to the tenor of the same. The note is a short one, and I am glad it has elicited Mr. Dod's interesting article. "I observed that many of those plants that made late growth during the mild months of October and November are entirely destroyed, and nothing but the centre remains in the best. Hay, short straw, coal ashes, or, better still, dry peat should be used as a protection to prevent a serious check to their growth." Without any undue partiality for my own views, I must say after examining my stock of *Primula japonica* this morning, I consider those observations accurate. My young seedlings were models of health, in reference to their foliage, at the commencement of the frost in December, and in two nights died down; in the stronger plants the centres and attached roots remain. I still think I was quite right in attributing this to the action of the frost. In compliance with Mr. Dod's request, I may say the soil is ordinary deep loam top-dressed with leaf soil. The aspect is southern, and the flower beds

have the protection of high walls on the north and east.—W. J. M., *Clonmel*.

REVIEW OF BOOK.

The Herefordshire Pomona. Part II. Containing Coloured Figures and Descriptions of the Most Esteemed Kinds of Apples and Pears. Edited by ROBERT HOGG, LL.D., F.L.S. London: David Bogue, 3, St. Martin's Place, Trafalgar Square.

JUST a year ago the first part of this exceedingly beautiful work was reviewed in these pages; now a second part has been issued, like its predecessor, save that more space is given to cider Apples, of which seventeen are portrayed. Indeed pictorially this second part is richer even than its predecessor; for whereas there were only twenty-two illustrations of Apples and Pears in Part I., in Part II. there are sixteen of non-cider Apples, eight of Pears, and the aforesaid seventeen of cider fruits, making in all forty-one coloured illustrations. The pages literally glow with richly coloured fruits.

The following are the introductory papers to the illustrated portion. First, "Modern Apple Lore;" then "A Sketch of the Life of Lord Scudamore," both by Dr. Bull, with a full-page portrait of his lordship; and a paper "On the Cordon System of Growing Pears," by Sir Henry B. C. Scudamore Stanhope, Bart., with a full-page woodcut of his trees at Holme Lacy.

Dr. Bull's chapter on modern Apple lore is very interesting and exhaustive, as he has gathered from all sources, from Shakespeare down to proverbs in the mouth of provincial country folks. He speaks of old-fashioned customs, now soon to pass away, such as snap-Apple and bobbing for Apples, and catterning. One custom on St. Thomas's day deserves a passing notice from the spice of cunning in the verse sung by the begging children—

"Wissal, wassal, through the town:
If you've got any Apples throw them down;
If you've got no Apples, money will do."

And do, I fancy, still better.

The older poets frequently make mention of Apples; and among the eighteenth-century rhymers poets there were few. Gay may be particularly noted. In addition to passages quoted by Dr. Bull is an amusing one in Gay's "Trivia," where, in his description of Frost Fair on the Thames, Gay tells us, in surely mock heroic strains, of the death of Doll the Apple-seller—

"Doll every day had walked these treacherous roads:
Her neck grew wrapt beneath autumnal loads
Of various fruits. She now a basket bore.
That head, alas! shall basket bear no more.
Each booth she frequent passed in quest of gain,
And boys with pleasure heard her thrilling strain.
Ah, Doll! all mortals must resign their breath,
And Industry itself submit to Death!
The cracking crystal yields; she sinks, she dies:
Her head, chopped off, from her lost shoulders flies.
'Pippins!' she cried; but Death her voice confounds,
And pip-pip-pip along the ice resounds."

The prevalence among the older writers of the adjective "red" as attached to the word Apple may be noted. It is "red Apples" everywhere, and no wonder, for bright colour is wanting in English scenery, and was wanting in English gardens formerly, and no doubt a colour-loving eye would delight in the bright red of the many ripe Apples, and some of our oldest Apples are among the brightest in hue, though seldom so large as modern varieties. Dr. Bull prattles of "Lamb's wool," that is the pulp of the roasted Apple floating on the top of the wassail bowl; of "Apple howling;" of decorating the house with Apples stuck upon three skewers like a little three-legged table, adorned also with nuts and strings of Holly berries. Something of this sort I have seen in the cottage of a Wiltshire peasant who had lived for some years in Wales. Dr. Bull wanders on, not quite, as he intimates, in "apple-pie order," but right pleasantly; even mentioning what some of us remember in our school days—namely, Apple scoops, beloved by old people, but as these have now good sets of artificial teeth the Apple scoops are no more. Dr. Bull ends his pleasant chapter by these sensible yet somewhat saddening words—"The plain country life of former days is itself passing away. The habits of the people are rapidly changing with the alterations and improvements of the age. The penny a week school, the penny postage, the penny newspaper, and the penny a mile railway train, have turned the thoughts of the people, their pleasures and enjoyments, into other channels, and have almost done away with the isolation of the country villages. Children's amusements are more thoughtfully and

happily provided for by school entertainments and summer picnics. The village wake is lost in the club feast of the district, the pleasure fair of the nearest town, and the excursions offered so cheaply by railway companies; and thus in the greater excitements of the world at large the simple customs and observances of the country villages are rapidly passing from disease to oblivion."

The next chapter consists of what is termed "A Sketch of the Life of Lord Viscount Scudamore;" well enough for a county history, and passable if published in some such work as "Account of Archbishop Laud and His Friends," should such a book ever be printed, but it is surely too long and too political for the "Pomona." It is terrible in its tediousness this sketch of this ecclesiastical-minded nobleman. In a book on pomology three of the thirty dull pages would have been sufficient, as they would have been enough to tell us about the connection between Lord Scudamore and fruits.

With a great sigh of relief I gladly pass to the chapter on "The Cordon System of Growing Pears at Holme Lacy," illustrated by a capital photograph. Why should not the cordon plan for walls be generally adopted? Room would be gained, and variety in Pears (chiefly fruits for dessert) is more needed, at any rate in a gentleman's family, than large crops of a few sorts in their very nature perishable fruits. "The cordon wall at Holme Lacy," we are told, "has a south aspect. It is 37 yards in length and 11 feet high. In this space eighty-three Pear trees are trained, comprising forty-three varieties. One half the wall was planted in 1861, and the trees bore fruit in 1864; and the other half was planted in March, 1865, and bore fruit in 1868. This cordon wall has hitherto been a great success." Certainly the cordon oblique system well deserves to become general in, say, the gardens of country gentlemen.

We come next to the fruits pictured and described. The plan followed is that such descriptions are given, as in Dr. Hogg's "Fruit Manual," with sections of each variety, as well as the beautiful-coloured portraits of Apples and Pears. First we have Blenheim Pippin, here called Blenheim Orange—the blossom, the fruit when gathered, and when brightly red for Christmas dessert. How one wishes this beautiful Apple would bear earlier; but alas! those who plant it, at any rate as a standard, often have no crop for eighteen years. Omitting the cider Apples we have next plate ix., five pictures of Pears—Forelle, Louise Bonne of Jersey, Williams' Bon Chrétien, Beurré d'Amanlis, and Flemish Beauty. In the second named the colouring is higher than usually seen; all are extremely beautiful, perhaps Forelle the gem. Oh! for sunny summers to produce once more such fruit. Plate x. represents to us five cooking Apples—Potts' Seedling, Tower of Glamis, which bore well even this late bad season, and which I have now in good order, the giant Gloria Mundi, the plain-looking and good Winter Hawthornden, and Nelson's Codlin, which is long-lived and vigorous and fruitful even in the Fens. Plate xii. four very handsome Apples—Emperor Alexander, Cox's Pomona, improperly here spelt "Cok's," Cellini, and Beauty of Kent—all these combine beauty and utility. Plate xiii. is artistically the most beautiful in the book; it represents three Pears—Beurré Hardy, Pitmaston Duchess, and Doyenné du Comice. The colouring, and particularly the shading, is exquisite. The Pears stand out from the paper and look as if we could grasp them; giving also a few leaves, as in the case of Beurré Hardy, adds to the execution and increases the ocular deception. Pitmaston Duchess is perhaps the very best. Plate xiv. gives us six good old Apples, chiefly for dessert, though two are for culinary use—Duck's Bill and Herefordshire Pearmain. The picture of Adams' Pearmain is among the very best of those of Apples. Plates viii. and xi. bring before our eyes the best varieties of cider-making fruit. These are naturally chiefly of local interest, most of them highly coloured Apples—all shades of red with one exception, the White Must, which looks like a pale-faced European among a group of rich-coloured Asiatics. One is glad to learn that the White Must, though among the oldest varieties and figuring in Phillips's poem on Cider, A.D. 1708, yet holds its own.

Such is this second part of the "Herefordshire Pomona," as to the fruits eminently satisfactory. I am glad to learn that the former part was so well received that the Woolhope Club have decided upon increasing very much the size of the parts, so as to be able to complete the work as soon as possible. It is to be complete, so it is hoped, in five additional parts, and the fruits represented will be more or less numerous in proportion to the support it meets with, "since the Club," and this is very generous, "has neither the intention nor desire

to make any profit from its publication." Such a work so executed is sure to do good, to be a guide to taste, and an instructor of those desiring to become pomologists. If I may so speak, Dr. Hogg's "Fruit Manual" for the study, the "Herefordshire Pomona" for the drawing-room. None of the many ornamental books of that most charming of rooms, the ladies' room, will be more likely to be enjoyed than this beautifully illustrated "Pomona."—WILTSHIRE RECTOR.

GALVANISED WIRE FOR GARDENS.

FOR some years I have employed galvanised wire for fruit tree training both in the open air and under glass, and the trees have not sustained any injury. On more than one occasion the mercury of the thermometer has fallen below zero, yet those parts of the shoots of Apples, Pears, Plums, Cherries, and Raspberries that touched the wire remained as sound as other portions of the trees; indeed, more sound than the spurs of several Pear trees which had the pith blackened on two occasions, and the trees were thus rendered fruitless during the succeeding summers. I have not had the charge of Peach trees trained to galvanised wire, the wires in the Peach houses being painted, and the few trees outdoors are secured to the walls with nails and shreds; but I have had experience in growing Cucumbers and Melons, followed by Tomatoes, on unpainted galvanised wire trellises, and I have never seen the growths of these tender plants even discoloured by being in contact with the wires. This immunity may be attributed to the genial temperature that is necessary for the cultivation of those crops; but no such circumstance prevented the wood of some Vines being injured that are trained to this wire. During the winters of 1878 and 1879 a viney has been exposed to the full intensity of the frost, not a degree of artificial heat having been afforded to the house. The Vines are still unpruned, and the laterals are in immediate contact with the wires, yet are perfectly sound. Such is my evidence. It is so different from that of other cultivators, who cannot be mistaken with the results which they have placed on record, that the question arises as to whether all galvanised wire is alike. There must be a reason for the differences—destruction of the wood in some gardens, and perfect immunity from injury in others, and it is of great importance that the problem be solved. Let all who can aid in the solution, for the question is a serious one.—A NORTHERN GARDENER.

SEVERAL years ago I was experimenting on different material to find a cheap and good substitute for Pea-sticks. After various trials I settled upon one that involved the use of wire. Common iron wire was of no use, as it rusted in a few days; painting was too expensive, so was copper wire. Galvanised wire suited for cheapness; but what about the tender tendrils of foliage of the Peas coming in contact with it? was my thought, as I had seen it condemned. I made inquiries amongst my gardening friends, the result of which was the same as the articles in the Journal. Some strongly condemned it; others, whose opinions I equally respected, found it had no injurious effect upon vegetation. So I thought the matter over, and tried various makes of the wire, and came to the conclusion that there was galvanised wire and galvanised wire, some kinds being decidedly injurious; others may be used without any harm resulting to the most tender plant. As the worst kind loses some of its detrimental quality upon exposure to the atmosphere it is always advisable, where it can be done, to put up the trellis some time before training the plants upon it.—W., Lancashire.

FOR the benefit of "C. I. P." I may state that some years back I wired a short wall of Peaches here. The trees were in sound health every way, and had previously been nailed to the wall in the usual manner. At the end of the first winter the young shoots were found to be everywhere either severely injured or killed quite through wherever they had come in contact with the wire. The wires were at once pulled out and a wooden trellis substituted, and the evil entirely disappeared. This was outdoors; but in a long late Peach house, where the same kind of wire was used, effects were exactly the same, but fewer shoots were injured. I gave the wires in this case three coats of paint, and so far no injury has been done. One thing I am tolerably certain of is that the injury is done in the winter time, and is always most outdoors. I know gardeners whose experience is just the same as mine, and others who declare their trees suffer no injury. Here outdoors it works whole-

sale destruction, and I would undertake to demonstrate the fact to anyone's satisfaction.—J. SIMPSON, *Wortley*.

SARRACENIA CHELSONI.

SARRACENIAS are not only interesting on account of their strangely formed flowers and leaves, but the rich colours with

which the leaves in some forms are veined and shaded render the plants very distinct and beautiful. They are, moreover, easily cultivated, for being inhabitants of swampy districts in North America their chief requirements are good drainage, abundant moisture, and a cool temperature. One of the most beautiful of the recent forms is the fine hybrid *Sarracenia Chelsoni*, which was raised by Messrs. Veitch of Chelsea, by

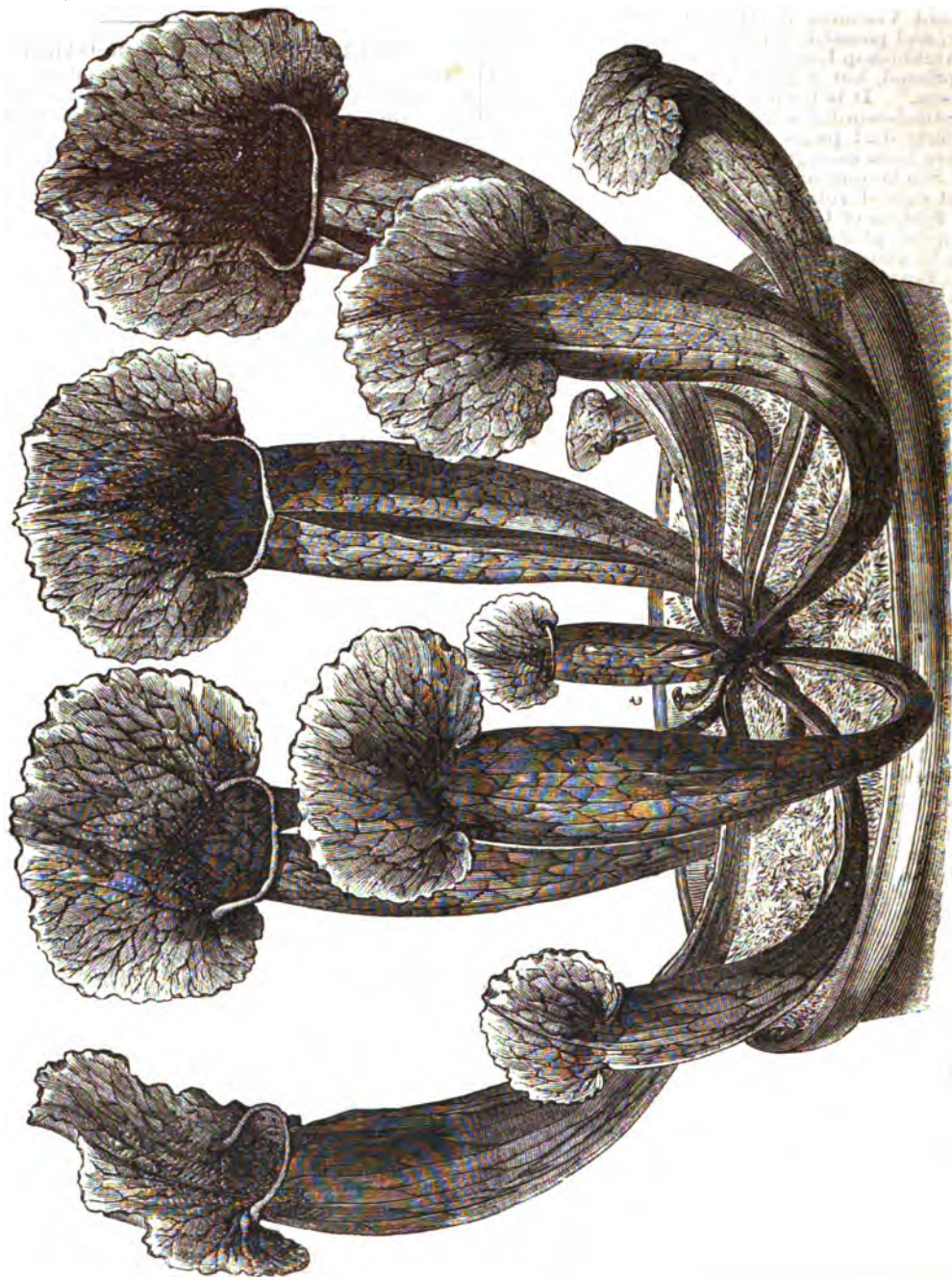


Fig. 14.—SARRACENIA CHELSONI.

crossing *S. rubra* with pollen from *S. purpurea*, and it is correctly described as combining the characters of both parents with a more elegant habit and brighter colour. It is also very free in growth, and with careful attention in supplying the necessary moisture a good specimen may soon be obtained. The soil should consist of peat and live sphagnum moss, a good depth of potsherds being provided to ensure efficient drainage—a point of great importance.

The merit of the plant received recognition from the Royal

Horticultural Society in 1877 by the award of a first-class certificate, and from the Royal Botanic Society in the following year by a similar award. The accompanying engraving (for which we are indebted to Messrs. Veitch) represents the appearance of the plant when grown in a shallow pot.

MYROBELLA, OR CHERRY PLUM.—Two years ago we purchased a few thousands of the above plant and had them

planted out in the home nursery. When received they were very small, with only a single shoot to each plant. Not knowing how they might succeed in this district, they were planted in a corner of the nursery where the ground is rather wet, of a poor, heavy, clayey nature, and somewhat shaded by large Elm trees, which, however, were far enough away so that their roots did not extend to the soil occupied by the Myrobellia plants. They were planted out 3 feet between the rows, and from 12 to 15 inches apart in the row. The first season they made very good progress, but last summer their growth was something extraordinary, many of the shoots being from 3 to 4 feet long, thick and strong in proportion. The growth was so vigorous and rapid during the two seasons that the ground was a perfect thicket of fine strong plants, many of the stems being as thick as an ordinary walking-stick. Had they been planted in a good rich soil it might have been expected that they would have made a fine growth, but in such poor ungenial soil it was very remarkable. These plants are required for cover planting, and during last month they were all transplanted into the covers, but how they may answer for this purpose I am not at present able to state. One good quality is that the plant lifts well, with plenty of good fibrous roots, after being two years in nursery rows. I have not had an opportunity of trying it as a hedge plant, but should the plants continue to grow for a few years as rapidly as they did last summer, in my opinion it would be too strong a grower, unless for wide and high hedges. Some others of your readers may be able to give their experience of it as a hedge plant. At the same time as the above we planted out a quarter with Sloe or Blackthorn, which were treated in the same manner, but the Myrobellia made double the growth of the Blackthorn in one season.—J. SMITH, *Mentmore* (in the *Journal of Forestry*).

STANDARD versus DWARF ROSES.

MUCH has been said during the last few years as to the best way to grow fine Roses, and we have often been told that the most wonderful blooms at large exhibitions were all, or nearly all, maiden blooms from standard Briars. Whatever the experience of others may be, the winters of 1878 and 1879 have convinced me that to grow many standard Roses is the greatest folly. I may safely say the late severe weather has killed 80 per cent. of what survived the previous winter. I shall therefore cease the cultivation of standard Roses, with the exception of those of the hardiest constitution. The following are the most likely to live:—Camille Bernardin, Dupuy-Jamain, Auguste Rigotard, Magna Charta, Sir Garnet Wolseley, Star of Waltham, Comtesse de Serenye, Ferdinand de Lesseps, Black Prince, Madame Lacharme, Marquise de Castellane, Beaulieu Johnson, Abel Grand, Madame H. Jamain, and Madame Thérèse Levet. My dwarfs are looking comparatively well. The worst are only killed down to the snow line, and a few like Abel Carrière, François Michelin, and Marquise de Castellane are green to the very tips.

Of standard Teas I fear I have not saved one, but my dwarf Teas I treated somewhat as recommended by Canon Hole, and I think I have saved all. As soon as the frost set in I took dry hay and wrapped it round the plants, and then earthed up with old manure, leaving the shoots just peeping out. I have only examined a few, but those were quite green, and I expect the others to be the same. For the last season or two I have taken a goodly number of cuttings and struck them in the open, and these with my Manetti plants will be the parents of my future Rose garden. I should like to hear how my brother rosarians have fared, especially in the north.—CURATE OF HOWDEN.

ALNWICK SEEDLING GRAPE.

A VISIT TO OLIVE HOUSE.

A FEW notes relative to the Alnwick Seedling Grape may be of interest to many readers of the *Journal of Horticulture*, particularly as it is likely to become a great favourite as a late Grape. Having seen it exhibited last summer and taking premier honours at one of our greatest provincial exhibitions, I was not slow in accepting an invitation from Mr. Bell to visit Olive House, Alnwick.

The garden is not very large, but nearly all covered with glass. It is on a steep declivity, which slopes towards the town. Most of the vineries are span-roofed. Mr. Bell's original Vine of Alnwick Seedling was bearing about twenty very fine

bunches, all very well finished. The dispute concerning the raising of this Grape is in the memory of most readers of the *Journal*. Mr. Bell does not assume the honour of raising it, but only for recognising its merits and bringing it out. He has no commercial interest in the Grape, but is desirous that it should become widely known as a late Grape. He has reasons for believing it to be a seedling of the Black Morocco Grape, which was received amongst a batch of seedlings at Alnwick Castle from Wortley many years ago. Mr. Bell has several Vines of Alnwick Seedling in the same house. Some were on the Gros Guillaume stock, but it is found to succeed better on its own roots. Visiting Olive House in November I observed an appreciable difference in the flavour of the Grape from what it had in September; it was less acid and more saccharine at the latter date, and the skin was much thinner. Mr. Bell had just exhibited a basket of the fruit at the Royal Horticultural Society's meeting, which had received an acknowledgment of its merits from the Fruit Committee. In this house were some very fine Grapes of the varieties Lady Downe's, Mrs. Pearson, and Mrs. Pince. Venn's Muscat was grafted on Lady Downe's and Black Hamburgh, but was better on the latter stock. This house was 60 feet long by 18 feet wide, and contained about eight hundred bunches of Grapes.

The second house, which is a little larger than the last one, contained some excellent examples of Venn's Muscat. Gros Guillaume grafted on the Black Hamburgh afforded a remarkable instance of the scion influencing the stock, the fruit of the stock being very small and bearing a striking resemblance to that of the scion. The next is a lean-to about 180 feet long by 15 wide, which was originally erected to test and grow the Alnwick Seedling in. The Vines have been planted only two years, and give extraordinary promise. In one of the divisions was a Vine of Alnwick Seedling with five stems and about 60 lbs. of Grapes. Gros Colman and Muscat of Alexandria were also very good, the berries of which were of an extraordinary size, while the rods were bearing thirteen large bunches each. This house, as it contained so many Vines of Alnwick Seedling, with its beautiful serrated leaves, which assume such rich tints of crimson, and the veins being dark purple and blotched with a fine dark green, had a very picturesque appearance. Mr. Bell recommends artificial fertilisation for setting the fruit of Alnwick Seedling, which he effects by means of a fox's tail. In this house were some magnificent specimens of the old favourite Vallette purpurea, bearing from forty to fifty spikes of bloom. The owner is proud of them, and not without reason.

Mr. Bell's method of cultivating Vines is nearly the same as that of other successful growers. At regular periods once a month from starting to finishing he gives the inside borders copious supplies of water; not even when the fruit is ripe are the borders allowed to become dry. For watering expeditiously he has a small reservoir formed at the top of the garden. Near to it he has an old boiler and tank erected in an outhouse. The water runs from the reservoir and also from the boiler, and he can therefore obtain a supply at any temperature, at the same time he can put in whatever stimulants he chooses for dissolving. From this tank runs a main pipe with branches about 1½ inch in diameter extending into the houses. At regular intervals provision is made for attaching the hose, and thus the borders can be watered with a slight amount of manual labour. Mr. Bell thins all the Grapes himself, and also does all the tying and disbudding.

The houses are heated with one of Wright's tubular boilers, a small one 8 feet by 2 feet, which satisfactorily heats over 2600 feet of piping. All who wish to see Grapes grown well, and who happen to be near Alnwick, should pay Mr. Bell a visit, for they are sure to receive a friendly welcome.—B. COWAN.

FERNS, HOW ARE THEY REPRODUCED?

THE above question has been answered long ago, and in a way no doubt that many have accepted as settling the question to their satisfaction. But there are many who cannot accept the answers given, and have good reasons for rejecting them. I am one of the latter class, and having been a grower of Ferns for a number of years my experience leads me to reject the theories referred to. Some of your readers may ask, "What are these theories?" and therefore I will mention one or two of them.

The first is from the work of Mr. John Smith, A.L.S., on

"Ferns, British and Foreign." At page 396 it is stated "that a remarkable discovery was made in 1848 by Coant Lessorey Saminski, that Ferns possessed organs analogous to stamens and pistils of flowering plants, and that these were produced on the prothallium. In the progress of growth, cells are formed on the under side of two kinds, which may be termed male and female respectively, and at this stage of growth they are fertilised or cross-fertilised, or as some believe 'hybridised.'" But Mr. Smith does not seem to fully accept this theory, plausible as it may seem, for on the next page he remarks, "Much has, however, to be investigated before any rule can be arrived at, such as why Desmobia, or plants with crowns, as a rule produce plants from seed in abundance, while Eremobia, or plants with creeping rhizomes, produce very few plants from seed." I will now refer to another gentleman's opinions on the subject, and they are widely different from the above—Dr. Farlow of Boston, U.S.A. The following is the substance:—That the young Fern as we see it produced on the prothallium is the result of a process of budding without the intervention of reproductive organs. Now in my opinion Dr. Farlow's theory is the only one acceptable.

It is well known to such as have had any experience in Fern-growing that many Ferns are produced by a process of budding by bulbils produced on the frond. But no doubt the question will be asked by some, How is it there are so many abnormal plants in the different classes if there be no process of fertilisation? This part of the subject I will leave for the present, but will give in my next not only my opinions and experience, but also the experience and opinions of some of the most eminent Fern-growers that I know.—JNO. RADON, *Sheffield*.

CHAPTERS ON INSECTS FOR GARDENERS.—No. 2. NEW SERIES.

SUNDRY jokes have been made at the expense of a section of our periodical press upon the "big Gooseberries," the "heavy trout," and similar items which serve sometimes to fill up a column and to astonish or amuse the reader. Locusts may be classed amongst the objects of wonderment that appear in some journals far too often, but the mention of this name of terror ought at least to make us thankful that in Britain we know nothing of the ravages of these fearfully destructive species. Occasionally the chronicler is correct who notes the appearance of a locust, for chance specimens are brought to our shores on board a vessel. Probably the theory that they are blown here is less likely, as much to their surprise perhaps as to ours, yet these never live to found a colony. In a great number of instances, however, it will be found that the record of the capture is erroneous, for many persons mistake for a locust the elegant insect called *Gryllus viridissimus*, or familiarly the great green grasshopper. Then again, as was first pointed out, we believe, by the late Edward Newman, in some country places the name locust, or "lokus," is applied to any sizeable insect that is, or is supposed to be, the cause of damage. There is evidence that various large caterpillars have been called "locusts," though they are entirely unlike the true insect—that for instance which occurs in Potato fields, and which from the singular thorax of the imago is styled the Death's-head Moth. In 1846, however, there was an arrival of actual locusts in England, specimens being taken in every county, and a number in the vicinity of the metropolis; but they speedily died off, as did some that reached us in 1869, since which date we have had no important records of the appearance of locusts.

These insects, then, which are nearer in structure to the grasshoppers than to the crickets, form the last group in the order Orthoptera that we have to consider. They have short antennae and shelving wing cases, but lack the peculiar musical apparatus possessed by most of the male grasshoppers. Locusts are not noiseless though, for they produce a sound by the friction of the legs and wing cases, which serves to give unpleasant intimation of the approach of a troop. In wing power they seem to surpass the grasshoppers, their excursions in the air being seldom for any distance. But scarcely any of the locusts walk over the ground or vegetation, leaping or flying being their modes of locomotion. It is said that during favourable weather a party will travel on the wing about six leagues in the day.

The migratory locust (*Acridium migratorium*) is the species that sometimes finds its way to England, but Africa, India, and the whole of the East, in fact, may be regarded as its home, although its occurrence in any particular district is a matter

of uncertainty, depending upon the weather and other causes not precisely definable. Probably we are right, however, in concluding that the length of our winter, and its humidity even more than its cold, is the reason why locusts do not make a lodgment with us. This insect has a greenish tint, the wings being nearly white, and the legs pink. The duration of its life is rather more than six months in the hottest weather; this is sometimes shortened, but throughout their existence these insects are active and devouring, usually passing through five moults. The eggs are laid by the females in small holes which they excavate in the earth. A smaller *Acridium* inhabits some parts of the south of Europe, and does a moderate amount of injury: apparently this has no inclination to wander westward. Then there are some curious little species of the locust tribe which belong to the genus *Tetrix*. In many places of France these are common in woods and pastures, but they are not observably injurious to the gardener or agriculturist. The thorax is enlarged into a shield which covers the whole body, and by means of which they easily slip through the fingers when an attempt is made to grasp them.

The earwigs have, by different naturalists, been placed amongst the beetles and amongst the grasshoppers and crickets; they have in structure some affinity to the former certainly, yet it is now nearly agreed to class them separately. But they are unlike the beetles in not undergoing a distinct change to a pupa or chrysalis state, in this point resembling the Orthoptera. Mr. Staveley remarks in his "British Insects" that persons, not horticulturists we will hope, sometimes bring accounts to the entomologist of a meeting they had with "a dreadful black earwig at least 2 inches long," the particular foe they encountered being possibly the "Devil's Coach-horse," the ill-favoured *Goriscus oleus*. There is no British species of earwig larger than the familiar enemy of our flowers, *Forficula auricularia*. It is somewhat singular that the name connecting the species with the ear is found not only in Britain but in other countries. All the species in this small group are fond of concealing themselves; hence, doubtless, there have been instances of their entering the human ear, where, of course, they could not possibly penetrate beyond the drum; but they are not more likely to do this than many other insects one might specify. Figuier's assumption regarding the French *Perce-oreille* or "ear-piercer" is that the forceps at the tail of the insect was supposed to resemble the little instrument used by jewellers for piercing the ear. Others have argued that "earwig" represents "ear-wing," because the beautiful convolutions of the lower wings were thought to be like that organ. The common earwig, however, rarely or never flies; other earwigs are occasionally noticed on the wing after dark.

We have about sixteen British species. Taking *F. auricularia* as a representative of the group, we notice that it is a narrow flat insect of various shades of brown, able to run forwards or wriggle rapidly backwards, with long-jointed antennae, and a pair of gauzy wings covered by short wing cases. The forceps at the tail are rather stronger in the males than in the females, and is employed by the insect for the purpose of folding and unfolding the wings. In the "Zoologist" a correspondent once stated that he saw an earwig seize a small beetle with the forceps and thus carry it off, and we find that when an earwig is struck it instinctively turns the forceps upwards, but the points cannot pierce the human skin. These implements are hardly noticeable in the young larva, but they develop gradually, as do the wings. The new brood appears in the course of the summer, and it has been stated by naturalists of undeniable repute that the mother earwig watches over the eggs until they are hatched, attending afterwards to her offspring with as much care as is shown by the domestic fowl. We have unfortunately never been able to witness this. Many of these insects survive the winter, living in nooks and corners, under bark, and also beneath the ground, whence the gardener often dislodges them in his spring operations. It may be conjectured that a large percentage of hibernating earwigs and other species were killed by the long-continued cold of the winter of 1878-9. It is as an enemy of flowers that the common earwig makes itself most conspicuous, but the species has a partiality for fruits, and probably the larvae often prey on young leaves and rootlets. In 1755 the "Gentleman's Magazine"—not always veracious in natural history matters—states that earwigs had been so abundant at Stroud as to cause a dearth of Cabbages! More than this, they swarmed in the houses, hiding in the furniture and amongst linen, so that the inhabitants had for a time to examine all their food cautiously. Happily such plagues of earwigs are rare though quite possible.

Since earwigs cannot be dealt with in the way some noxious species are got rid of, owing to their shy habits, it is necessary to trap them, and in doing this it is not advisable to follow the lobster-claw fashion, but very effective traps are made of hollowed-out twigs of elder stopped at one end, into which many of them will creep during the night after feeding. These can easily be attached to sticks supporting Dahlias, Pinks, and plants specially favoured by earwigs.

By some gardeners the little insect called the thrips is designated the black fly, to distinguish it from the aphid or green fly, though in actual fact aphides may be seen of a variety of shades of colour beside green. And, again, it is the case that the thrips is endowed with wings, but very seldom do the insects attempt to fly, yet their celerity is remarkable and their tail movements somewhat ludicrous. It would seem as if the tail was thus wriggled for the purpose of getting a start in the air, in which the thrips do not succeed. The genus and order are identical, for the solitary genus thrips forms the Thrysanoptera, thus named from the fringed wings, which are slender and veinless. In place these insects come near the Orthoptera, as they are active in all their stages, but the mouth is like the organ of a bug or an aphid with the addition of minute mandibles. The largest of these when adult is only about the tenth of an inch in length. Numbers, however, form an equivalent for diminutive size, and it is noticeable that insects of the thrips genus injure plants, not merely by sucking the sap, but in addition by depositing a secretion that clogs the pores. Thrips adonidum and *T. ochraceus* are too well-known intruders in our hothouses or conservatories, where they may be dealt with, their arena being limited. Out of doors it is impossible to interfere with the swarms of thrips that appear frequently in the month of August; and as one author says by way of consolation, "a few thousands more or less would not make much difference."—J. R. S. C.

DISEASE-RESISTING POTATOES.

As the above is becoming a fashionable heading, and seeing Schoolmaster Potato announced as a disease-resister, I beg to state that it has been very much diseased this year in many places. I planted a bushel of seed got from the very first Potato-seed establishment, and was unable to get one dishful of sound Potatoes to taste from it, although a plentiful crop. Beside them in same plot I had a quantity of Magnum Bonum, all good without one bad one; on the other side Snowflake, an enormous crop, were half of them unusually badly diseased, half sound, and that being well treated have remained sound. The Schoolmaster with me was also much worm-eaten, and must be a particularly bad Potato for a wet season. Being an Irishman I trust no one will send one bushel of Schoolmaster into Ireland, but send as many tons as they can of Scotch Champion and Magnum Bonums.—SAXONING.

WORK FOR THE WEEK.

HARDY FRUIT GARDEN.

STANDARD Apple and Pear trees, Damson Plums and Cherry trees in orchards succeed best when not subjected to any formal system of pruning, but it is advisable to examine them annually and to thin out or remove any superfluous growths, especially branches that cross each other. The large branches and stems when infested with moss or lichen should be carefully scraped and then washed with a solution of salt or fresh slaked lime; but the latter is not nearly so effectual as the brine. Apples and Pears grown in the open rarely have the borders to themselves, but the ground to within a short distance of their stems is occupied by other plants which require a rich and loose soil, thus causing the trees to root deeply and to grow luxuriantly. Borders are devoted to Gooseberries and Currants, yet few devote borders entirely to the fruit trees which are so much more important. On this account fruit trees in gardens often compare very unfavourably with those in orchards, where the trees have undisputed possession of the soil. Old trees in gardens, however, are often fruitful though the ground is highly manured and turned up annually. The way to avoid the evils mentioned above is to allow fruit trees proper and undisturbed borders, not admitting any plant to interfere with their successful treatment. Although the best results attend the limitation of the roots of fruit trees grown under glass, it is rarely practised with trees against walls and in the open, yet it is a subject well deserving of adoption. Where the growth is restricted root space must be proportionate, and where there is rich soil and high cultivation the head must be allowed corresponding extension with the roots if good crops of fruit are desired. Many excellent varieties of Pears may be

successfully grown as standards or unpruned trees, such as Jargonelle, Williams' Bon Chrétien, Beurré d'Amanlis, Heasle Beurré de Capiaumont, Comte de Lamy, Aston Town, White Doyenné, Marie Louise, Swan's Egg, Beurré Diel, Thompson's and Zéphirin Grégoire, and the fruit of such varieties when produced upon standard trees is generally superior in flavour to that borne by trees grown against walls. American blight (*Aphis lanigera*), is a dreadful pest, to which the Apple is subject and spreads with great rapidity. It is, however, destroyed by repeated annual dressings of paraffin, which may be applied during the winter in mild weather. The Gooseberry caterpillar is a destructive pest which it is better to prevent than have to destroy. After the bushes are pruned it is a good practice to take out the soil around the stems to a distance of about 18 inches, and as deep as the roots will permit, entirely removing it, and either burning or mixing it with gas lime for the destruction of the larvæ. The roots may remain exposed to the weather for three or four weeks, and then be covered with manure or fresh soil. Another plan is to cover the surface of the soil under the boughs in spring with fresh tan 2 or 3 inches in depth, allowing it to remain until the winter following, when it may be removed or dug in.

MUSHROOM HOUSE.

When a majority of the beds are in a bearing state a moderate amount of artificial heat only will be required, and according to the temperature must the supply of moisture be regulated. It is not advisable to allow the temperature to fall below 55°, which will secure a steady growth, and the produce will be marked by bulk and superiority of quality, and the period of production is extended. When, however, the supply is too limited the temperature should be increased to about 65°, the moisture being proportionately increased. The beds will need an occasional watering, but it must be given judiciously, as excessive watering will destroy the mycelium, and extreme dryness will check the growth of the spawn. When Mushrooms are showing freely give a moderate watering, and look over them again in the course of a few days. A gentle damping of the walls, &c., will be required daily, ventilating moderately whenever the weather is favourable, avoiding, however, cold draughts.

FRUIT HOUSES.

Vines.—Another return of sharp weather has made forcing slow and difficult work, ventilation having to be greatly diminished. The atmosphere in such weather is laden with moisture, and the growth made is comparatively soft; therefore when the weather is cold and the sun obscured no more heat should be employed than is necessary to a steady progressive growth, and the moisture should be judiciously diminished. To avoid a stagnant vitiated atmosphere a little extra heat is necessary in the early part of the day, so as to admit of moderate ventilation without reducing the temperature. The Vines started last month will be breaking freely, and where fermenting materials were applied to the borders before the house was closed the growth will be rapid. The rods should be well syringed three times a day until the bunches are formed, when syringing must be discontinued, but there must not be a deficiency of atmospheric moisture. Damp the walls and paths, and if the borders have been mulched with horse droppings they also should be damped. The ammonia arising from the latter will assist the foliage and help to check red spider; or if no mulching has been employed sprinkle the borders inside the house with guano water in the early part of the afternoon. The temperature should be 55° at night, advancing gradually to 60° when the Vines are in leaf and 65° by day by artificial means, keeping the fires going every morning until a little air can be admitted at 70°, closing at that temperature. Houses where Vines are in bloom should have a night temperature of 65°, with 5° more for Muscats. Muscats, Sweetwater, and others that do not set freely should have the points of the bunches drawn to the light, assisting fertilisation by shaking the Vines every day or by dusting ripe pollen over the stigmas. A constant circulation of rather dry warm air will be found highly advantageous. Attend to tying, stopping, and thinning in the early house. Be careful not to wet the pipes when they are very hot, as it is likely to cause rust. Keep up the supply of ammonia, either by introducing a few fresh horse droppings or by sprinkling with guano water. The inside borders should be well supplied with tepid liquid manure. Vine eyes may now be inserted, using pots or square turves. Firm well-ripened wood only should be selected, filling the pots with a rich friable compost. Insert the buds half an inch below the surface of the soil, and plunge the pots in a bottom heat of 80°.

Melons.—The earliest of plants will now be potted singly into 3-inch pots. Plants intended for training to trellises should not be stopped but be supported by sticks, removing the laterals as soon as they can be detected up to the height of the trellis, above which allow every alternate lateral to grow. Plants which are intended for pits or frames should be stopped at the second rough leaf. Do not be in a hurry about planting out, but allow the plants to become strong. The soil—well-mellowed heavy loam—should be placed in a dry shed at once, chopping it up in pieces about the size of a hen's egg. The fermenting materials must also receive due preparation in the way of turning and mixing. Make another sowing for succession. Plants from this

sowing will be the best for planting in frames dependant solely for heat on fermenting material.

Cucumbers.—As the days lengthen heat and moisture may be slightly increased. Except a light syringing on bright afternoons damping the walls, &c., in the morning and afternoon will be sufficient moisture for the present. Continue the temperature as advised in our last calendar. The plants should be examined and superfluous growths removed about twice a week, the Cucumbers being impatient of overcrowding. Young plants should be kept near the glass to secure sturdy growth, shifting them into larger pots as soon as necessary. Those plants for training to trellises should have the growth trained up without stopping, removing the laterals as they show from the bed to the trellis; plants for pits or frames should have the point pinched out at the second rough leaf. The preparation of fermenting material, as advised for Melons, should be proceeded with so that there be no unavoidable delay when the time for planting arrives. The soil should be placed under cover; mellow turfy loam which has been stored a twelvemonth, and if for beds in houses add about a sixth of well decomposed cow dung.

PLANT HOUSES.

Greenhouse.—Softwooded autumn or early winter-flowering Heaths of the *hyemalis* type should be placed after flowering in a light situation, being extremely careful in supplying water. Autumn-struck cuttings of show *Pelargoniums* should as soon as they have filled the small pots with roots be shifted into a larger size. Those 4 to 6 inches in diameter will be sufficiently large. Employ good turfy loam with about a sixth of well-decayed dung, and a similar quantity of sand. Any that have not had their points pinched-out should be stopped to induce them to break; those having several shoots should be trained so as to form the groundwork of the future plant. Keep the whole stock near to the glass, and admit air freely whenever the weather is favourable. Herbaceous *Calceolarias* must be shifted into larger pots as they require it, not allowing them to become root-bound. Good loam with a fourth of old manure or leaf soil will suit them well. They must be kept near to the glass, cool and moist. *Calceolarias* and *Cinerarias* are much subject to aphides, and both are impatient of severe fumigation, therefore fumigate lightly and frequently. Let *Kalceanthes* have plenty of light, and do not supply water too freely, yet they must not be allowed to become so dry as to injure the lower leaves. *Cyclamens* do not succeed so well in an ordinary greenhouse as in an intermediate temperature, and as they are so useful for flowering in winter a small house or pit should be appropriated to them, where they can be kept near the glass; but where they must of necessity be grown with other plants they should have a good light situation, and be assisted with weak liquid manure. *Cinerarias* producing their flowers will be assisted by liquid manure, especially if the pots are small. *Primulas* should have plenty of light, and a temperature of 45° to 50° for producing fine trusses. *Fuchsias* that are stowed away beneath stages and similar places should not be allowed to become too dry, or they will not start freely. When needed sufficient water should be given to keep the roots from perishing and the wood from shrivelling. *Liliums* also if wintered in such places are liable to be neglected in watering. If not potted as soon as the stems ripened, they should have the whole of the soil in the pots above the bulbs carefully removed so far as can be done without injuring the roots, renewing with good turfy loam, a fourth of old manure, and a little sand.

Ferns.—Scale is perhaps the worst insect pest to contend with among Ferns, as to destroy it a stronger solution of most insecticides is required than the plants can endure. We find, however, that a solution of nicotine soap, 4 ozs. to a gallon of water applied with a brush or sponge, destroys the scale without injury to the fronds, except such as are young and naturally of a soft texture. It is equally efficacious with thrips, which also succumb to frequent fumigation. This is perhaps the best time of the year to give the plants a thorough cleaning, as from the drier atmosphere and consequently matured condition of the fronds they will better withstand the process than when they are growing freely. Avoid too much atmospheric moisture during the short days, and afford a temperature for the stove species of 55°, and 5° more during the day, and for the greenhouse species of 40° to 45°. Plants of *Adiantum cuneatum*, *A. assimile*, *A. gracillimum*, and *Pteris serrulata* that have been kept dry and cool for a time to induce rest may now be turned out of the pots, have the balls about one-third reduced, and be returned to the same size of pot; or if the plants are in small pots and require a shift they should merely have the sides of the ball loosened a little with a pointed stick and be transferred to pots a couple of inches larger.

Orchids.—Many Orchids will require repotting during the next two months, therefore have the necessary materials in readiness. Sphagnum should be carefully cleaned from the rubbish and woody matter, which is liable to promote fungi. Crocks should be broken ready and washed, and the pots must be clean also. The baskets should be examined. Teak, oak, and maple are the most suitable wood for baskets. *Aerides*, *Vandas*, and *Saccolabiums* will first require repotting. Any that have lost their lower leaves and become bare should be either placed lower in the pot or cut partly through, and in a week quite through, taking care to leave

some roots above the cut. The pot should be drained with large crocks placed in the pot edgways, and to within 8 inches of the rim. This allows the water to pass away freely. Place 8 inches of sphagnum on the top of the pots, pegging down the roots firmly, a slight damping being necessary to prevent the plant shrivelling. *Miltonias* that require repotting or top-dressing should be done at once, using tough fibrous peat. As soon as the plants begin to produce roots they will require frequent syringing. *Miltonias* succeed well in perforated pans suspended from the roof in the most shady part of the Mexican house. All pseudo-bulbous plants must have the centres kept above the rim of the pots. *Oncidiums* will be flowering now. They must not suffer through deficient supplies of water, especially *O. Cavendishianum*. Plants that have been moved to a dry room when in bloom must be carefully watered when returned to their proper quarters. The temperature of the East Indian house should be now kept at 70° by day, rising 5° more with sun heat, and 5° to 10° lower at night.

TRADE CATALOGUES RECEIVED.

William Bull, King's Road, Chelsea.—*List of Flower and Vegetable Seeds.*

Dick Radclyffe & Co., High Holborn.—*Catalogue of Flower and Vegetable Seeds.*

Hooper & Co., Covent Garden.—*Spring Catalogue.*

E. G. Henderson & Son, Pine Apple Nursery, Maida Vale.—*Illustrated Catalogue of Flower and Vegetable Seeds.*

Wm. Hugh Gower, Tooting.—*Illustrated Catalogue of Seeds.*

William Potten, Sissinghurst, Staplehurst, Kent.—*Catalogue of Vegetable and Flower Seeds.*

Cranston & Co., Hereford.—*Catalogue of Vegetable and Flower Seeds.*

W. Hean, Quick & Co., Barnstaple.—*List of Vegetable and Flower Seeds.*

Amies' Chemical Manure Company, Mark Lane.—*List of Manures and Testimonials.*

TO CORRESPONDENTS.

ADDRESS (H. W. Tweed).—We think if you write to Messrs. C. & F. Sanderson, Iron Founders, &c., Mansfield, Notts, you will obtain what you require.

PLUMS FOR STANDARDS (H. P. S.).—Four free-bearing and useful varieties for this purpose are Early Rivers, Gisborne's, Victoria, and Prince Englebert.

BOILER FOR HEATING GREENHOUSE (C. A. R.).—We never recommend any particular boiler. It would not only be unfair for us to do so, but no one can state which is the best boiler for heating a house without seeing the structure and the nature of the arrangements connected therewith. All the boilers advertised from time to time in our columns are good, but some forms are perhaps slightly better adapted for certain positions than others, and, further, some people have a fancy for tubular and others for conical and saddle boilers. It is really a question of fancy, for we know houses that are heated in the most satisfactory manner by all these kinds of boilers. It is impossible for us to give an estimate of the cost of heating in any case, neither can anyone give an accurate estimate without seeing a correctly drawn plan of the structure so as to show the elbows, bends, &c., that will be required in fixing the pipes. Two rows of 4-inch pipes, a flow and return, across the ends and along the front of your house if it is a lean-to, will be quite sufficient for heating it effectually. If the house is well sheltered 3-inch pipes will do.

SCOTCH POTATOES (M. S.).—We cannot answer questions of the nature of the one you have submitted, as we never recommend seedsmen. Your best course will be to advertise your wants.

LOPHOSPERMUM SOANDERS (Regular Reader).—The seeds should be sown during February or March in light sandy soil over a hotbed. The young plants when they have produced two or three leaves should be potted off singly in 60-size pots, employing a compost of loam, leaf soil, or peat, sand, and well-decayed manure. As the plants advance in size they may be shifted into 48-size pots or planted out in the borders. *Ipomoea hederacea* and *Maurandya Barclayana* require similar treatment. If well managed all the above plants will flower during the ensuing summer.

NE PLUS ULTRA PEA (A Young Gardener).—This extremely useful Pea was first offered to the public by Messrs. Noble, Cooper, & Bolton, of Fleet Street, London, in 1853 or 1854, and has thus, as you suppose, been in cultivation for a quarter of a century.

MR. FISH'S SULPHUR ESSENCE (Alex).—From the designation which you apply to an insecticide frequently recommended in our columns by the late Mr. Robert Fish, we presume you require the following recipe and instructions:—Take a pound of flowers of sulphur and a pound of quicklime powdered, mix them together with sufficient water to form a paste, add a gallon of water, put the whole in an iron kettle, and boil for twenty minutes stirring all the time; then take the pot off the fire and allow the contents to settle, and pour off the clear liquid into a bottle and mark it that no one may mistake it in a hurry for brandy or rum. About half a gill or quarter will be sufficient to place in a pot with three gallons of water, and at this strength it becomes a valuable wash for all plants troubled with thrips, red spider, and other insects; if not given stronger it will do no harm to plants in general. When tender, or the young shoots growing, or likely to be exposed to a fierce sun early next day, the half of that strength will be sufficient. Even for brushing hot-water pipes or plates for sulphur fumes this decoction thus reduced is more economical than sulphur alone. It was also recommended by Mr. Fish for destroying mildew on Vines and other plants.

REMOVING LARGE EVERGREENS (J. Weston).—While small and moderately sized shrubs may be transplanted with comparative safety during favourable weather in the spring we should hesitate to move large and

valuable specimens then. After a wet and cold summer between two severe winters the soil is in an unusually cold state, and injured roots will not heal quickly, while new fibres will be produced slowly. We should dig partly round the specimens now, cutting some of the strong roots, and leave the shrubs where they are until the end of September. If they are then transplanted with care and properly attended to the warmth of the soil will induce the speedy emission of roots.

BRIARS FOR ROSE STOCKS (J. B. D.).—Select out of the hedges stems with clean healthy bark and firm spines. Take them up carefully with a mattock, and cut the jagged ends of the roots to a uniform radius. Cut off all the branches, and head the Briar back to the required height. They should not be, except for pendulous or drooping trees, more than 3 feet high, as if the sort budded should grow well you cannot see the blooms without pulling the twig down. Eighteen inches or 2 feet we think the best height. Briars with bad-growing Roses on them are soon covered with Lichens or Moss. A wash of fresh-slaked lime and a little salt dissolved in water is the best cure for this. After planting the stocks mulch them, and keep them mulched next summer, and well water the roots two or three days before budding, also occasionally afterwards. After budding the Briar, tie a leaf over the bud for a day or so.

DEUTZIA CRENATA FLORE-PLENO (B. S.).—This *Deutzia* is quite as hardy as *D. gracilis* but does not flower so early as that species, nor can it be forced into flower so quickly. It forces well, however, and forms a succession to *D. gracilis*, and is valuable both for conservatory decoration and for affording out flowers for vases. In sheltered situations out of doors where *D. gracilis* flowers towards the end of April *D. crenata flore-pleno* does not flower until the third or fourth week in May.

GROWING FRUIT TREES IN GREENHOUSE (Redoubt).—You cannot successfully grow fruit trees in pots in a house where the roof is covered with Vines. Such fruit trees as you name require all the light possible when they are grown under glass, and in such a house as you describe the Vines must be confined to the apex of the roof directly over the central path if you wish to have fruit trees in the side borders. With abundance of light and air the trees can be grown in pots plunged in the borders. Two-thirds of rather strong turfy loam and one-third of decayed manure with an 8-inch potful of crushed bones to every two bushels of the compost will be suitable for the trees. Pot firmly, and after the pots are filled with roots and the trees are bearing fruit top-dress with a richer compost. Apricots do not usually succeed so well in pots as the other fruits named.

PLANTING A ROSE MOUND (Amateur Gardener).—As Roses are generally most enjoyable when they are so planted that they can be readily reached for cutting or close examination without treading on the soil to any great extent, we should arrange the mound into a series of beds by forming grass paths, commencing at regular intervals at the base of the mound and continuing them in a curving direction to a circular walk that should surround the shrub on the apex. The paths need not be more than 2½ feet in width, and with a little taste in forming the curves the grass would not be visible at a short distance away, but the mound would show as unbroken mass of Roses. A Holly or any other rather close-growing shrub would be suitable for the centre. The Roses should be dwarf and be planted about 2 feet apart. You cannot have a better selection than that on page 341 of the last volume, the issue of October 30th, 1879, which contains the selection of garden varieties. If you do not possess that number it can be had by sending 3d. in postage stamps to the publisher.

IMPROVING CLAY SOIL (J. R. B. B., Norwood).—Dig the ground and turn it in ridges so as to expose it to the action of the frost. When dry and frosty break up the ridges as frequently as possible, but never attempt to work it when in a wet sticky state. Add in as large quantities as you can obtain lime rubbish, wood or coal ashes, sand, or gritty material of any kind; also tree leaves, old tan, and long littery manure. Soot is also suitable for such soils. By persevering in this practice, and draining the land if needful, your garden will be improved in texture and will grow most kinds of hardy flowers and vegetables. But all crops should be sown and planted as far as possible, as the final digging is done in spring so as to avoid treading on the ground which in strong clays is always prejudicial in early spring. In sowing seeds collect a little fine soil for covering them and they will germinate the better, and the plants will grow more freely than if no such care is exercised. Roses, Carnations, Phloxes, and Delphiniums usually grow well in strong soil, and the following flowers succeed in damp borders: *Acorus gramineus*, *Aronicum glaciale*, *Caltha palustris flore-pleno*, *Cardamine pratensis flore-pleno*, *Dodecatheon Meadia*, *Epilobium angustifolium album*, *S. latifolium*, *Epimedium grandifolium*, *E. planatum elegans*, *Picaria ranunculoides flore-pleno*, *Hedysarum obscurum*, *Hepatica angulosa*, *H. triloba* vars., *Iris germanica* vars., *Lobelia fulgens*, *L. hybrida* vars., *L. syphilitica* and var. *alba*, *Lychnis chalcedonica* and var. *alba* and *plena*, *L. diurna flore-pleno*, *Lythamachia grandiflora*, *L. thyriflora*, *Meconopsis cambrica*, *Mertensia paniculata*, *Myosotis distictiflora*, *M. palustris*, *Nierembergia rivularis*, *Ophiopogon spicatus*, *Primula acaulis* vars., *Ranunculus amplexicaulis*, *Spiraea*, *Aranacus*, *S. filipendula plena*, *S. japonica*, *S. palmata*, *S. venusta*, *Trollius europaeus*, *T. japonica plena*, and *T. napellifolius*. We do not know of a small work more likely to suit you than our "Garden Manual," which contains plain instructions on the cultivation of flowers, fruits, and vegetables. It can be had from this office in return from 1s. 9d. in postage stamps.

FAILURE OF GARDEN CROPS (Grandville).—The roots sent had all the appearance of being grown in a shallow unfertile soil. The plants, however, may have received a check by frost or excessive wet when they were in a quite young state, or they may not have been thinned early enough. You do not state the depth of the soil. Is it dug each year as deeply as possible? In many gardens digging is only half done. If the soil is less than 18 inches in depth, and we imagine it is, a very small portion of the subsoil should be brought to the surface—about half an inch or so, the bottom being well loosened with a fork or pick. In the case of light soils with a gravelly subsoil manure is, we consider, most economically applied in the spring, as if it is dug in the autumn much of its virtue is washed down beyond reach of the roots of the majority of crops. A dressing of salt in the spring would benefit your garden. Apply it in March at the rate of twenty bushels per acre, and in summer as the crops are advancing in growth you would find a judicious use of fertilisers very valuable. A mixture of 1 cwt. each of nitrate of soda and common salt, with 2 cwt. of superphosphate of lime applied during showery weather between the rows of the crops, at the rate of 2 oz. per square yard, would be of great benefit. Do not sow seeds too early this spring, but wait until the soil is in good condition; the crops will then grow on without being seriously checked by spring frosts. For instance,

most seeds that are usually sown in March may with advantage be sown in April, and it is very important that the thinning-out of all crops requiring it be done as early as the young plants can be handled. Fruit trees growing in poor gravelly soil are very liable to become cankered, the best preventive of which is matching the soil with manure to induce surface roots.

CONNECTING PIPES WITH BOILER (A. D. Morpeth).—While it will be "safe" to employ inch pipes for connecting the boiler with the 3-inch pipes of the house you will not ensure such a free circulation of water as if you continued the 3-inch pipes to the boiler. If this is not desirable we should employ 3-inch pipes; their cost over smaller pipes will be trifling, and they will prove more satisfactory in the end.

REODENDRON MADDENI NOT FLOWERING (J. W.).—If the plant is growing healthily the soil and drainage must be suitable, and the probable cause of the non-production of flowers is the imperfect ripening of the wood. After growth is completed the plant should be as fully exposed to light and air as possible in the greenhouse, or afterwards removing it to a sunny position outside for a few weeks, the pot being plunged in coal ashes. If you adopt this plan it is likely that another season you will be rewarded by the appearance of flowers.

GLAZED SANITARY PIPES FOR HEATING (A Seventeen-years Subscriber).—The pipes referred to as heating a vinery at Sedbury Park are employed as a flue, and Mr. Jowsey finds that they diffuse a greater amount of heat and more regularly than is had from an ordinary brick flue. The pipes are 8 inches in diameter, two rows of them being arranged in the vinery.

FRUIT TREES IN POTS (P. C.).—The size of the pots you name will do very well, and the compost is suitable. The trees may be plunged in ashes outdoors during the summer, and be assisted by manual top-dressings as required.

ZONAL PELARGONIUMS (Bury).—Place the plants on a shelf in a very light position in your greenhouse. They will grow freely yet sturdily in a temperature of 45° to 60° if they are not crowded. Water them carefully until the roots have penetrated the fresh soil, and not at all copiously until they are in free growth and the roots protruding through the drainage of the pots. As soon as these roots are seen the tips may be removed from the plants, and as soon as fresh growths are fairly in progress after the pinching the plants may be shifted into 6-inch pots, potting them firmly in a compost of two-thirds of turfy loam and one-third of old decomposed manure; a little charcoal or crushed oyster shells mixed with the soil will also be an advantage. In these pots the plants will flower freely, provided they are grown in a very light airy position. By stopping the shoots once after the first pinching the plants will have sufficient branches for affording a good display of flowers the first season. They can be stopped again if you desire to have them very dwarf and bushy, but it will defer the flowering. There is no prescribed time for stopping Zonal Pelargoniums. A safe rule is never to pinch the shoots until the roots are in a very active state.

APPLES (E. Hall).—Dumelow's Seedling and Trumpington are very distinct. The former is a valuable late-keeping culinary Apple with a brisk sub-acid flavour, the latter a pleasantly flavoured dessert Apple. The origin of Dumelow's Seedling is published in the "Fruit Manual." The other Apple you name is a local variety.

HEATING GREENHOUSE AND ROOM (E. R. I.).—A 3-inch flow and return pipe as shown in your sketch will be ample to maintain a temperature of 40° to 45° in the greenhouse during the winter. Two valves on the pipes in the stove just before they enter the greenhouse will cut off the heat from the larger structure when it is not required there; but to insure the circulation in the stove alone or both houses together as required you will need a short cross-pipe and valve connecting the two mains, flow and return, so as to cause the water to circulate through the whole length of the pipe, opening it when the valves on the straight are closed, and closing it when they are open. The boiler may be "built inside the house," but on account of smoke and dust should be fed from the outside. To heat the room you will require to take the water as a flow through the two divisions of the greenhouse, the pipes rising a little from the boiler to the end as well as in the return to the boiler, but instead of being connected to the boiler should be continued up to the room 6 feet above the greenhouse, where should be fixed a flow box or cistern, which may be within the greenhouse or room as is most convenient, and at such a level that the pipes for heating the room will have a slight fall as they are fixed around the apartment, making them return, and should so continue until they join the return socket of the boiler. You will need another return from the cistern, which may join the return pipe from the room, and upon that you will need a valve to close it when the room is to be heated, and two valves will be required on the pipes in the room, one near the cistern and the other where the pipes leave the room; by these means you can heat the whole either separately or together. We have acted upon the consideration that the heating of the glass structure is of primary importance, the room being secondary. One pipe around the room will be sufficient to make it comfortable. Please send us your full postal address.

COVERS FOR BINDING THE JOURNAL (F. W. Ware).—Covers can be supplied by the publisher from our office, post free for 1s. 3d.

ZONAL PELARGONIUMS (J. P. A.).—Guinea, Mrs. Moore, Louis, Zuleika, Polypemus, H. Jacoby, Jeannette d'Arc, Marmon, Burns, Titania, Lizzie Brooks, Mrs. Pearson, Astaire, Mars, Hebe, A. F. Barron, Ivana, Cleopatra, Imogen, White Venus, Mosart, Mrs. Catlin, Proserpina and Mrs. Findlay. *Golden Tricolors*:—Marie Stuart, Mrs. H. Little, E. H. Reynard, John Downie, Baroness Burdett Coutts, Miss Goring, Gem of Tricolors, Catharine, Peacock and Reynolds Hole. *Silver Tricolors*:—Mrs. Laing, Miss Farrer, Proteus, Mrs. Maxwell Masters, Eva Fish, Minnie Warren, and Bertha. For culture see reply to "BURY," but the tricolors, especially the silver varieties, are better for having a third of turfy peat mixed with the loam and a liberal admixture of crushed charcoal. Employ clean and well-drained pots, and do not overpot the plants. We never recommend dealers. You can obtain what you require by consulting our advertising columns.

NUMBERS AND INDEX (Puddle).—You can have the numbers you require, post free for 6s. 6d., by sending instructions to the publisher.

NAMES OF FRUITS (J. Crossling).—We shall be much obliged if you will give us the name under which you received the Pear. It is not a common variety. (W. Potten).—Haeon's Incomparable.

NAMES OF PLANTS (L. B.).—The *Azalea* is *Narcissiflora*, the Orchid *Laeli* *albida*. (Roan).—The Orchid is *Rodriguezia crispata*. When correspondents send single flowers of Orchids for us to name, they should be accompanied

with some general description of the inflorescence and habit of the plant. (*Cheshire*).—Your description is so incomplete that we are unable to determine what plant you had; it might have been one of the following:—*Kaulfussia ameloïdes*, *Catananche cærulea*, or *Brachycome Iberidifolia*, the Swan River Daisy, all of which have blue flowers. (*C. A. Long*).—*Maxillaria tricolor*.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

THE FIELD CULTURE OF BROCCOLI.

WHEN broccoli is cultivated in the field it is usually with the view of selling the crop to supply the vegetable markets. It has, however, found no place in the cropping of farms generally. It is, therefore, now our intention to indicate how the home farmer may grow this crop with a double object, and either use it as food for cattle or sell the heads for the vegetable market when the price is favourable. In the spring of the year 1875 broccoli heads were, however, so plentiful in the metropolitan and other markets, that they did not pay to send away, and where parties were not prepared to feed cattle with them it proved a serious loss, but this was only an exceptional occurrence.

There is no doubt that the growth of cereals and pulse crops for several years has been unremunerative in consequence of the low prices. We therefore propose to take up the question of growing a crop like that mentioned in the heading of our subject which may not only be sold in the vegetable market, but that, in the event of the crop not being of sufficient value in the vegetable market, may be used with advantage in feeding cattle upon the farm. Having in our own farming for many years grown broccoli and cauliflower as a farm crop, we can recommend it to the attention of the home farmer, not only when the farm may be situated near a town or station convenient for sale, but that it may be made a profitable crop for feeding cattle and sheep. The weight of broccoli where the best seed is sown is sufficient to warrant the growth of it as a farm crop in alternation with the ordinary root crops.

The seed of those varieties must be purchased which will produce the heads of cauliflower and broccoli at such periods when they will be likely to be not in demand and make the most money. We have, however, the choice of varieties now which we had not some years ago, either as to quality or the period when they become fit for use. The early varieties are called the Autumn Giant and First Crop cauliflower, the later varieties the New Late Queen and the Self-protecting Autumn broccoli. The chief district in the kingdom is Cornwall, where the early crops of cauliflower are grown in competition with that sent from the Channel Islands and the neighbourhood of Cherbourg in France. But our chief object is to state how the ordinary sorts of broccoli, such as the Early Snow and the old Brimstone and other approved varieties, can be cultivated under the usual circumstances of farm management, and without any more expensive preparation than is usually incurred by the growth of full crops of mangolds, carrots, and potatoes. When we refer to the varieties above named it is because it is important that they should be of gross and stout growth, in order that not only large heads should be available for sale, but that the stumps or stems should be of large dimensions. If the latter are used daily as the heads are removed they furnish food of considerable value for cattle.

We have used them for some years, but especially in the year 1864 and spring 1865, it being a very dry summer, and Swedes and turnips were very scarce, then the broccoli stumps proved an excellent supplement for feeding cattle. Our method of using them was to cut the stems just above ground at the rim formed by the fall of the first leaves, and the greater number of them were from 2 to 3 inches through and of varying lengths. These were cut into 2-inch pieces and passed through Gardener's cutter, and then they were mixed with cake meal and bean meal. Having at the time a number of steers and heifers feeding for a cattle show, we found these stumps valuable, for the animals made excellent progress, although they had no hay but straw only in the racks, and were successful in obtaining premiums on

the day of exhibition. We had also an excellent opportunity of comparing the advantage of feeding with the broccoli food with other roots, for the animals had turnips before, and mangolds after the broccoli stumps had been all consumed, and the allowance of meal being the same, we found the bullocks made as good progress with broccoli as they did during any period of their fattening. It will be readily seen that the better and earlier sorts of cauliflower cannot be so easily used as a farm crop except for sale under certain circumstances of soil, situation, and aspect, and also because they are of a lighter and more slender growth, leaving but little for use as a feeding material after the heads have been sold. For these reasons we will not recommend it as a farm crop of such general utility.

We will now endeavour to show the home farmer how we have been enabled not only to cultivate broccoli as a farm crop, but also to turn it to account as a profitable result. In the dry summer of 1864, so fatal to the growth of Swedes and turnips, being prepared with a large number of broccoli plants raised from seed sown in February of the old Brimstone variety, we proposed to grow them at once, ploughing after a piece of trifolium grown upon a mixed soil, hazel loam and clay in patches. As fast as the trifolium crop was cleared away a portion of the land was manured with eighteen or twenty loads of farmyard manure per acre, which after being spread was raked into every third furrow at the time of ploughing. The plants which were strong were planted with the spade directly over the dung, the time of planting being from the 20th of May to 7th of June. The crop was horse-hoed and hand-hoed, and flinched but little on account of the dry weather, because when we plant with the spade the land is opened deep enough for the roots of the plants to reach the moist bottom of the furrow. Besides, in very dry weather we always direct the planters to cover the hearts of the plants about 1 inch in depth with loose soil, then if the weather turns the leaves dry like hay the heart is preserved. As soon as the roots take hold of the ground the heart throws up a new leaf, and this bids defiance to dry weather. In this way we obtained a remarkable growth, whilst the greater portion of root crops where raised from seed in the field became a prey to insects. The crop passed through the winter without injury of any consequence, and in order to be satisfied of our profit we kept a strict account of the heads and the price they made in two towns about eight or ten miles distant. We continued the sale from the middle of February to the end of March; and after charging for the horse and cart and the man's time who sold them, and all expenses incidental to the sale, we found a balance profit of £22 10s. per acre, and the stumps or stems weighed from 12 to 14 tons per acre, tested by weighing the produce of a rod in different portions of the field. The stumps were used for the feeding of cattle as before described. If, however, the entire crop had been used for cattle-feeding they would have been very valuable. The land was then sown with drage, which proved one of the best crops we ever grew under any tillage, and reached ninety bushels per acre.

We still continued to grow broccoli, and in 1866 we adopted our usual plan of growing mangolds, at once ploughing after a crop of clover hay, and after being dunged the field was ploughed, and after being worked fine was drilled with mangold seed, which germinated well, but the plants were eaten by the little white slugs as fast as they appeared above ground. We directly set about planting the land with broccoli, the slugs being so numerous that they would have destroyed any crop to be raised from seed. The broccoli plants, however, were large and strong, and being planted as is our custom with the spade, they grew away immediately in spite of the slugs. The time they were planted was rather later than we should have chosen—about the first week of July, nevertheless the plants grew with remarkable luxuriance, the season being favourable. We, however, gave up this farm on the 29th of September; and the valuer upon the occasion, a very experienced man, who was well acquainted with the cultivation of cauliflower and broccoli in Cornwall and elsewhere, asserted that he had never seen a finer crop in his life, and upon measuring the leaves they were many of them more than 3 feet in length, with the stalks and stems in proportion.

WORK ON THE HOME FARM.

Horse Labour.—We are now in the dull part of the season for horse labour, because in most instances the weather during the first fortnight of the year was favourable for sowing wheat, except on wet or strong land. There may be, however, some cases where the home farmer wishes to sow April-bearded wheat instead of barley, and especially if it is desired to lay down grass for a permanent pasture, as the seeds are found to germinate much better after wheat than when sown in the barley crop. If any wheat land remains to be sown we advise the sowing of nursery wheat, as it has proved for many years past very hardy and well suited for late sowing, and is also considered to be the finest of the red wheats for miller's purposes. As soon as ever the land is dry enough to work freely barley may be sown with the best possible prospect, for the early sown will generally produce the choicest samples for malting purposes. The next cereal to be sown would be the best varieties of early white oats, especially

the White Canadian, for these yield when the land is in high condition full crops of the best fodder straw and grain of heavy weight, especially when sown after mangold, in which case these oats come to harvest so early that they stand the best chance of being well harvested. There is also, we have often found, the opportunity of securing a good crop of stubble turnips after them. We have also planted strong cabbage plants of an early variety to cut for collards, or dwarf Savoy for late cutting. This work gives but little trouble, because we sow in every other furrow from 3 to 4 cwt. of Peruvian guano per acre mixed with damp ashes, and then lay the plants along the land side of the furrow and plough them in. This plan is not so tedious as planting with either the spade or the setting stick. The crop will be sure to afford a good quantity of food for stock, but sometimes they will make a low price in the vegetable market.

Hand Labour.—This will be required in hedging, banking, ditching, planting whitethorns or fir trees as the case may be. In open weather threshing may be now proceeded with, for we prefer to get the threshing done before the busiest time comes, as it is to a certain extent an important labour question, and ought not to displace valuable labour at a busier period. In wet days there is always, or ought to be, labour under cover found for both men and women. Where bullock-feeding is going on there will always be such work as preparing and cleaning roots in readiness for the cutter, breaking and sifting oilcake and crushing corn, or, when this work is done by either horse gear or steam power, as it ought to be, it is well to get such work well forward. Anticipating the requirements of manure, guano should be broken down and sifted, so that no pieces may be larger than a horse bean, and put back into the bags again in readiness for use at the seed time. In another week or two the dry land pastures and park lands should be dressed with artificial manures, more particularly when poor barren patches do not show green like other parts of the grass land; 2 cwt. of Peruvian guano, 1 cwt. of nitrate of soda, and 2 cwt. of mineral superphosphate per acre will be found a good and sufficient dressing, and pay well for the outlay, whether the land is fed or cut for hay the next season. Upon cold strong land pastures or meadows, especially those bearing the small running rushes, a dressing of 2 cwt. of Peruvian guano and 4 cwt. of superphosphate per acre will prove the best dressing, this being our usual practice; but, to confirm it, about two years ago we recommended a farmer to use this application, and he reports that no rushes can now be seen, the dairy cows having eaten both the grass and rushes most closely. It therefore weakens the rushes and gives a chance for the best kinds of grass to prevail.

The shepherd will now find that he has plenty of work both night and day, for the Dorset down ewes are lambing fast. The Hampshire downs are just beginning to lamb. The long-wooled ewes will not lamb before the first week in March, except under particular circumstances, when the lambs are required for exhibition. Upon all dairy farms the time has now nearly arrived when the main portion of the herds will be expected to calve, and this is always looked forward to with interest, whether the making of cheese or butter, or whether the sale of milk or the suckling of calves for veal, is the object to be attained. It is now more than at any other time of year that a supply of milk for the metropolis or other large towns will pay for attention, as at present milk is very scarce in all the towns, milk being sent to London from distances over a hundred miles, and consequently ought to pay the dairy farmer for producing. A question arises why the dairy farmer should not anticipate this scarcity of milk at this time of year and endeavour to fill up the vacuum. There certainly is a vacancy in consequence of the custom of the herds kept in the pasture districts being so managed as not to produce milk in any quantity until there is a prospect for grass in the pastures, and this is more especially the case where cheese and butter are the chief produce. But where the produce of the dairy is to be sold for milk, and a fair proportion of arable land is connected with the farm, this matter may receive more attention, so that the cows may be brought in to calve some months earlier, and be fed upon roots, hay, cake, &c., with great advantage, because up to the present time this has been greatly neglected.

RESULTS OF POULTRY KEEPING.

A YEAR has elapsed since I sent you a statement of my poultry experiences; perhaps another year's account may not be unacceptable. I am sorry to say the results are not so satisfactory. In the early part of the year the hens fell off in their laying, and greatly annoyed me by the persistent manner they took to feather-eating. Nothing I could do would stop the evil habit, the only remedy—viz., a grass run, being beyond my reach. One Brahma hen was a perfect cannibal. After a fortnight's solitary confinement and half rations, when I put her back with the rest she went at them like a vampire. The Brahma cock, a fine, heavily feathered, massive bird, had his legs picked bare, and blood frequently streaming from them. Sulphur ointment and bitter aloes had no effect, so I was obliged eventually to dispose of the whole lot. The cock never took to feather-eating. I do not find that Brahmas are such good layers as they are said to be. I have

some pullets, hatched on the 1st of May, now eight and a half months old, and they have not commenced laying yet. The four Brahma hens I had last year only laid ninety eggs each from 1st of January to 30th of September. I sometimes think I overfeed them. I have generally given them 2 lbs. of barley meal in the morning, kitchen scraps (between 2 lbs. and 3 lbs.) at mid-day, and 8 lbs. of barley or wheat in the evening. This allowance is for nineteen birds which have in addition as much green food as they like. They certainly eat it all up, and would take more if I gave it, and there is never any food lying about. Lately they have been dropping soft eggs at night, although they have heaps of lime rubbish in their runs. For the last three months I have allowed them to roam about the garden, except when there has been snow on the ground. I am afraid my system is wrong somewhere, and I should be glad of any hints to rectify my errors.—F. C. TAYLOR.

1879.	Eggs.	Hens.	Pullets.	Egg set.	Chickens hatched.	Chickens reared.	
January ..	149	21	..	..	..	..	Stock on 1st January consisted
February ..	109	21	..	..	..	..	of 1 Brahma cock and 4
March	313	21	..	..	..	..	Brahma hens and 17 cross-
April	340	20	..	25	15	14	1 hen died. [bred hens.
May	286	20	..	25	12	12	31 chickens reared to maturity,
June	190	13	..	11	5	5	7 hens sold. [of which 17 were
July	133	11	..	..	..	..	2 do., do. [pullets and 14
August	101	10	..	..	..	..	1 do., do. [cockereils.
September ..	19	4	..	..	..	..	6 do., do.
October	9	..	17	..	..	..	4 Brahma hens and 1 cock sold.
November ..	29	..	17	..	..	..	
December..	113	..	17	..	..	..	17 pullets and 3 cockereils re-
	1791						main in stock.

RECEIPTS.	£	s.	d.	EXPENDITURE.	£	s.	d.
870 eggs sold	2	3	7	Value of 22 birds in }			
1221 eggs used at 1d. ..	5	1	9	stock 1st Jan., 1879. }	4	14	0
13 birds killed at 4s. ..	2	12	0	Paid for food	9	9	4
22 birds sold	3	9	6	Sitting Brahma eggs..	0	14	0
Value of manure	1	0	0	Broody hen	0	3	6
Value of 19 birds in				Interest on cost of			
stock	3	16	0	houses	1	0	0
				Profit	2	2	0
Total	18	2	10	Total	18	2	10

I ENCLOSE a statement of the account of my poultry yard for 1879 for insertion in your Journal. The stock is kept in three pens—one Brahma and two half-bred Houdans and Hamburgs.

—M. T.

RECEIPTS.

December, 31st, 1879.	£	s.	d.
By stock—26 fowls at 2s. 6d.	£3	0	5
25 Pigeons at 1s. 6d.	1	17	6
		4	17 11
By sale of 1401 eggs at 1d.		8	15 1½
27 fowls killed:—			
2 at 1s. 9d.	£0	3	6
3 at 2s.	0	6	0
6 at 2s. 3d.	0	13	6
9 at 2s. 6d.	1	2	6
7 at 3s.	1	1	0
		8	6 6
5 chickens, 3 months old, sold in the spring at 2s.		0	10 0
Sale of Houdan cockerel for stock		0	3 0
" Pigeon		0	2 6
" 46 Pigeons killed at 10d.		1	18 4
		£19	13 4½

EXPENDITURE.

January 1st, 1879.	£	s.	d.
To stock—22 fowls at 2s. 6d.	£2	15	0
29 Pigeons at 1s. 6d.	2	3	6
Hamburg cock and two hens	0	15	0
		5	18 6
December 31st.			
To sundries—New nest boxes	£0	7	0
Wire netting	0	4	11
Commission	0	4	6
Sitting of eggs	0	1	1½
		0	17 6½
To food—Barley	£3	0	6
Wheat	0	16	6
Maize, crushed	0	18	11
Screenings	0	9	0
Rice	0	4	0
Barley meal	3	8	0
Spratt's meal	0	4	6
Peas	1	0	0
		10	1 5
To balance, profit		3	0 11
		£19	13 4½

MANAGEMENT OF BREEDING BIRDS.

We have done our best to assist young fanciers in the mating of their birds for breeding. It is of at least as great importance to keep them in health when matched as to match them; indeed from one point of view more so, for many a breeder who thinks only of the number of eggs laid and of chickens to be reared, utterly regardless of their form and feather, must attend to the health of his birds as much as the most scientific fancier. Breeding fowls suffer much from the changeable kind of weather we have lately been having—i.e., returns to frost and cold after a few warm days. Many eggs now laid will be found to be unfertile; others will appear good when tested, but the vitality in them will be so low that the germ will cease to live at some time or other during incubation. Both these failures of course arise from weakness in the parent birds. Those only will have strong and early chickens who know how, and will take the trouble, to keep the parent birds in full health and vigour.

To begin with, there is nothing like liberty and exercise. We would rather in the case of most varieties have eggs from birds irregularly fed and ill housed, with a good run, than from those closely confined in excellent quarters and with an ample diet. The cocks even more than the hens seem to require space to keep them sprightly; and when we find many eggs which fail at any stage of incubation we always at once look to the health of our male birds. A cock in full vigour will always be civil to his hens and call them to food, not eating greedily himself, or at least waiting to see them first begin. On the other hand, if a cock seems ever ravenous, races about after the feeder, and tries to anticipate his wives in getting titbits, it is a sure sign that he is weakly and wants attention. Such a bird should be fed by himself on the best and most nourishing fare. A little liver minced small or a little crust soaked in ale will help to restore him, and Spratt's food should be mixed with the ordinary meal according to a recipe we have often given. Hens are by no means so liable to get out of condition as the cocks if only they have a tolerable run. Indeed if there has been a long period between their completing the moult and beginning to lay they are often too fat, and hence there may be another cause of unfertile eggs. This evil, however, generally corrects itself when they begin to lay regularly.

Too frequently, when once good birds are procured and mated, their owners cannot realise the fact that many other conditions are necessary for the production of good chickens, and when once the eggs are laid will hardly believe that the future health of the birds to be hatched from them in great measure depends on that of the parents at a past date. We remember a season in which we were entirely prevented from looking after our own breeding stock in the early months. Lots of chickens, and apparently singularly fat and fine ones, were hatched, but almost all died mysteriously within a few days after their birth. For a long time the cause of the mortality was a perfect mystery to us. Every imaginable treatment was tried—soft food, hard food, plain and stimulating—all to no purpose. Some were coddled up in a warm room, others put in coops far apart in shrubberies, but all to no purpose. At last we observed that the chickens from one pen lived, even when mixed up in the broods which chiefly perished. These had had a free run; the rest of the breeding birds had been much confined in small runs, and were on examination found to be in abnormally fat condition. This unhealthy state, be it remembered, had not caused the eggs to be clear, or the germs to fail and die during incubation. The chicks had hatched well and were fine, but something was wanting either in their organic development or in their constitution from the overfat and unhealthy condition of the parents.

We have spoken of birds at liberty or on large runs. Few breeders, however, can so indulge them. Where stock fowls are confined in small runs it is by no means easy to keep them in perfect health. Beware of overfeeding, at the same time do not let them down. Three meals a day are necessary when there is little to be picked up, but there must not on any account be full ones. We remember an excellent piece of advice, given, we think, by Miss Watts—viz., always to make poultry run for their food by throwing it in different directions. If this be done, and pains be taken to supply all the materials necessary for digestion and the production of eggshells, such as grit, green food, and mortar rubbish, and so to give in a small place that which would naturally only be obtained by much wandering, there is no reason why poultry should not be long kept in perfect health and vigour even in a most restricted space. The breeding season is just the time when the want of any of these little necessities tells upon their constitution; and success with our spring broods, strange though it may seem, depends greatly on attention to such small details. It should not be forgotten that in confined runs far fewer hens must be allotted to the cocks than when they have liberty. With the quieter and more stay-at-home Asiatics this does not make so much difference; but in the case of Dorkings or Hamburgs we should not give more than three wives at present to each cock in the former state, while if free he may well have six.

Lastly, breeding birds must on no account be exhibited after

the new year begins; the fatigue and dissipation utterly unfit them for domestic duties.—C.

FEED THE SMALL BIRDS.

SOME years since, when small birds were over-numerous and were destroying man's food, I wrote against the folly of increasing their numbers by what I then thought injudicious care and fostering. Now the balance is evidently the other way. Two terribly severe winters, and a wet summer which added the eggs and was destructive to flies and other bird food, have thinned the ranks of the smaller birds terribly. I now advocate feeding them. I am doing so twice daily. Blackbirds and thrushes come and many sparrows, but I rarely see a tom tit and never a chaffinch. Robins appear to be fairly represented at the banquet. I notice that cock birds are more numerous than hens, so that nesting will be a difficulty among them. I am glad to see a fair number of hedge sparrows, which I am surprised at, as they are the earliest to build, and their bright blue eggs so easily seen and taken.

As the frost is so intense I find it best to rub the crumbs very small; if not, the tender beaks have little chance with the hard and frozen pieces of bread, and only large birds get the food. I see at a house near me rooks making off with big bits, and the little birds, which need most, getting nothing. There is no time to lose, as the frost is again intense. Little morsels of suet and fat are very good for our little feathered friends, particularly for those most in trouble—the soft-billed kinds. I hope many little hands after breakfast will collect and add to the crumbs.—WILTSHIRE RECTOR.

ALEXANDRA PALACE BIRD SHOW.

THE present Exhibition is the third of the kind held in the tropical part of the Palace at Muswell Hill, where the temperature is mild and equable, and where exotic shrubs and plants have interspersed amidst them some 850 entries of Canaries and British and foreign specimens, the chief of them being songsters, whose melodies, although not harmonising, are cheerful and inspiring. The Exhibition was opened to the public on Saturday last, the day previous being devoted to judging—an arduous duty carried out by Mr. George J. Barnesby, Mr. C. J. Salt, and Mr. F. W. Wilson. The Show will close on Friday next, and is worth seeing. The classes in which the Canaries are number no less than thirty-seven, comprising clear, marked, ticked and crested Norwich, Belgians, London Fancys, Lizards, Yorkshires, Cinnamons, Scotch Fancys, Lancashire Coppers and Plain Heads; besides ten classes for Mules and a like number for British birds, comprising Goldfinches, Bullfinches, Linnets, Redpoles, Siskins, Skylarks and Woodlarks, Thrushes, Starlings, and Blackbirds; and an Any other variety class, containing a white Linnet, the Chaffinch, the Magpie, the Hawfinch, the Snow Bunting, the Wagtail, the Gros or Pine Beak, the Bramble Finch, the Yellowhammer, the Robin, the Greenfinch, a pied Sparrow, and a couple of sage-looking barn Owls, which maintained their serenity notwithstanding the continued twittering and chattering uproar caused by many of their neighbours. There is also a white Blackbird, and in the migratory class several Nightingales and Waxwings, besides a Titlark, Wagtail, Blackcap, Redwing, &c.

There are sixteen classes of foreign birds, most of them remarkable for their brilliancy or exquisite shading and diversified markings of the plumage. One amongst the many notable specimens of the collection is a merry piping Crow, whose chief delight appears to be to laugh as hearty and as often as possible, varied chiefly with its shrill and oft-repeated question, "Who are you?" to any visitors presenting themselves in front of its cage. Another extraordinary specimen of the antipodes is a Cockatoo, which has been in the possession of its owner several years, and whose performances are worth witnessing if only to prove to what extent a bird can be trained. There are many foreign birds of note for their chattering habits in the way of Cockatoos, Parrots, and Parrakeets, representing the wilds of Australia and the tropical regions. One entry must not be omitted to be mentioned—that of Burk's Parrakeets, which command considerable attention.

In the first six classes for Canaries Messrs. Cassell, Petter, and Galpin offered a special prize—namely, a copy of their book on "Canaries and Cage Birds," valued at £1 11s. 6d., or a copy of Wright's "Illustrated Book of Poultry," or Fulton's "Book of Pigeons"—of the same value—for the exhibitor making the most points in those classes, which was easily won by Messrs. G. & J. Mackley of Norwich, who entered in the Show about 125 specimens. Messrs. Mackley offered a special prize (a silver medal) to be competed for in Class 7 by amateurs who had never won a cup, medal, or any special prize at any all-England show. This prize was won by Mr. J. T. Galey of Clapham. Praise is due to Mr. J. S. Cooke, who had the management of the Show, not only for the manner in which he had arranged it and causing so many valuable birds to be properly attended to, but for the facility afforded to the Judges in performing their duties with despatch. This last matter is a most essential one, for if the Judges' books are not properly

classified and numbered much delay ensued, and thus the neglect of the early issue of the catalogue takes place, and disappointment is caused to those exhibitors who provide the essential materials for exhibitions. Another feature of interest in the Exhibition we draw attention to—that of describing upon large elevated cards at the head of each class the number of the class and also the particular breed of the birds exhibited. Visitors can at once see without referring to the catalogue what breed of birds each class contains. The price of each specimen is named upon a smaller ticket affixed to the cage. Besides this duplicate information a catalogue is printed for those wishing to possess one.

VARIETIES.

IMPORTATION OF EGGS.—From returns furnished by the Board of Trade it is found that in the nine months ending September 30, 1879, there were imported into England 5,107,587 great hundreds of eggs (the great or long hundred is six score), value £1,816,434, as against, during the corresponding period of 1878, 5,117,094, value £1,958,604; and of 1877, 4,967,951, value £1,970,596. In 1878 we imported 6,590,956 great hundreds of eggs; in 1877, 6,259,880; in 1876, 6,275,217; in 1875, 6,176,863; and in 1874, 5,671,269. The respective values were £2,511,096, £2,478,377, £2,620,396, £2,559,860, and £2,433,184. Those 6,590,956 great hundreds represent 788,714,720 eggs per annum, or considerably more than two millions a day. From Denmark, in the year referred to, we took 218,011 great hundreds of eggs, value £67,654; from Germany, 1,523,219, value £488,968; from Holland, 861,448, value £142,218; from Belgium, 372,897, value £148,580; from France, 3,784,920, value £1,599,776; from Portugal, 56,381, value £18,802; from Spain, 150,180, value £49,473; from the Channel Islands, 83,683, value £35,247; and from other countries, 80,217, value £11,153.

—MR. G. MANVILLE FENN writes as follows in "Cassell's Magazine" for January—"Silently and without ostentation the birds are ridding you of pest after pest. They take seeds? Well, sow more, as better men have done before; and be grateful that these wondrous works of your Creator's hand affect your home, making it beautiful with their presence, divine with their songs, and glory in the fact that they find your garden a sanctuary and hardly flee at the tread of your foot. The tameness of the birds may have been shocking to that hero of the poet who was "lord of the fowl and the brute;" but nothing in a country home is more interesting than to watch the gradual confidence that grows amongst birds when they find that they can mate and nest in peace. I speak with no exaggeration, but I write from a place that literally swarms with feathered fowl—one of the quiet nooks of old England, where, save at certain seasons, the gun is never heard; where the hawk hangs poised in the soft blue sky; where the night-jar utters its rattling note, the peewit tumbles headlong over the marsh; where the heron gathers its goodly company, and amidst the ruins of a fine old castle the jackdaw rears its powder-headed brood. The lover of bird life and ways could find enough of observation here where, as night falls, out come the owls to hawk over the fields in silent ghostly flight, saluting you with a hideous hiss startled on their way, while their young sit waiting and uttering a curious hiss, looking in the gloom like goblins of the night."

—THE same magazine contains the following on a doctor's use of a Carrier Pigeon—"These useful birds have been employed for some time by Dr. Harvey J. Philpot as 'unqualified assistants' or apothecaries' messengers. While out on practice Dr. Harvey takes half a dozen birds along with him on his rounds in a small basket, and after seeing a patient ties the prescription round the neck of one of them and liberates him, when he flies straight home to the surgery, where the medicine is prepared and sent to the patient without loss of time. Should any patient be very ill and an early report of his condition be desired by the physician, a bird is left with him to bring the latter tidings."

—THE AGRICULTURAL DEPRESSION.—Mr. Mechi's balance sheet for 1879 is a fresh contribution to the annals of agricultural depression. As compared with that of 1878, the account shows a deficiency of over £750—a very large amount on a farm of the size of that at Tiptree Hall.—(Mark Lane Express.)

—It has been computed that the raising of thirty bushels of wheat to the acre will remove from the land 51 lbs. of nitrogen, 24 lbs. of phosphoric acid, and 87 lbs. of potash. This, it is submitted, could be replaced by 60 lbs. of sulphate of ammonia, 171 lbs. of superphosphate of lime, and 76 lbs. of chloride of potassium.

—SEED FOR THE SMALL FARMERS IN IRELAND.—We are glad to observe that at a recent meeting of the Dublin Mansion House Relief Fund it was proposed by the Rev. Canon Bagot, seconded by Mr. Browne, M.P., and resolved—"That a deputation consisting of the Lord Mayor, the Right Rev. Dr. Trench, the High Sheriff, Canon Bagot, Mr. George Brown, M.P., Alderman Fardon, and other members of the Committee, do wait upon His Grace the Duke of Marlborough and the Chief Secretary, to urge upon them the urgent necessity of immediately providing seed

potatoes and oats of the best quality for the small farmers for the next season." The importance of providing supplies of good seed oats and seed potatoes has long been urged by the *Irish Farmer's Gazette*, and, with our excellent contemporary, we trust that the step which has been taken by the Mansion House Committee will lead to the fulfilment of a measure which will be of the greatest benefit to the poor small farmers of the west of Ireland.

CAN BEE-KEEPING BE MADE PROFITABLE? IF SO, HOW?

To the question, "Can bee-keeping be made profitable in this country?" my answer is Yes. "Has bee-keeping ever been made a profitable pursuit?" I again reply, Yes, by many people. "How can bee-keeping be made profitable?" is a question that covers a large field, including, we think, the bee farmer himself, hives, bees, pasturage, management, produce, and markets.

1. More depends on the bee farmer being the right man for the work than is generally thought of. To be successful he should possess some practical knowledge of bees, and a fair share of courage in facing the dangers and difficulties connected with their management. All who commence bee-keeping for profit should endeavour to master the art of handling and manipulating their hives without fear. Confidence is gained by experience.

2. *Hives.*—These should be large, porous, convenient, and low-priced. A hive containing from 2500 to 8000 cubic inches of space is about my favourite size. A few years ago people were laughed at for recommending hives so large, but now the most successful bee-keepers in England and Scotland use and recommend them. Large profits cannot be had from small hives. The Stewarton hive, which has done good work, is 18 inches deep by 14 wide without supers. Mr. Raitt's bar-frame hive contains sixteen bars and has done excellent work. The bees in large straw hives have been known to gather 10 lbs. of honey in a day, and swarms have risen to about 160 lbs. the first season. These results are, however, exceptional. Inexpensive hives should be adopted by every bee-farmer for more reasons than one. Quinby truly says that in bee-keeping there is no return for ornament in hives, and that where profit is the object 1s. 6d. is an ample price for a good hive in America. Indeed, if wood were not an objectionable material for hives I would use boxes, which can be had of grocers at 4d. each. Those that come from abroad with tinmed meats are made of wood an inch thick and contain about 2000 cubic inches of space. I buy many of them for garden purposes, but if wood were equal to straw for bees they would be used in my apiary, and being easily enlarged would answer well. Cheap hives not only keep down expenses, but they enable the bee-farmer to offer and sell stocks or hives of bees at a moderate price. We use straw hives well made, but we never gave as much as 5s. for one. There is generally a good demand for strong stocks from our apiary at prices ranging between 80s. and 40s. each. In good seasons it is an advantage to buy such hives at these prices; and in unfavourable years it is an advantage to sell them at such prices. By using large cheap hives the bee-farmer can enter the market with superior goods at moderate prices. In past years there has been difficulty in meeting the demand for bees. One season we had to refuse orders to the amount of £96. This is mentioned here that the reader may see the expediency of using inexpensive hives, of being prepared to turn part of his stock into cash when honey is scarce or when opportunity is at hand.

3. *Bees.*—What sort, common or Ligurian? Both are good enough for all purposes, and nobody has furnished evidence to prove which is the better of the two. If both are excellent why give three times as much money for a swarm of Ligurians as for one of common bees? Those who keep and multiply stocks for sale merely will find it to their advantage to deal in Ligurians as long as the passion for them continues.

4. *Pasture* is an important element in apiculture. Some districts are much better than others; I mean more fruitful of honey. There are about eighty different plants in this country that yield honey, but less than a dozen of them growing abundantly in a district make it an eligible place for bee-farming, in other words, an excellent place for bees. The principal honey-yielding plants of Great Britain flower at different times, and thus the bees have three seasons of honey gathering. Fruit trees, which yield honey in great abundance and of good quality, flower in April and May, making the first season. June and July make the second season, in which bees have rich pasture on sycamores, field mustard, field beans, limes, and white clover. Long days with a higher temperature make this second season the best of the year. August makes the third season, presenting to bees the late blossoms of white clover and heather blossom. Heather continues in flower till about the middle of September, but it is seldom that hives gain weight after the first week in September.

5. *Management.*—Bee-keeping is and will be profitable under various forms of management. The swarming systems, the non-swarming systems—modifications and combinations of these all answer under good management. Some are better for one place or season than others. Much must be left to the wisdom of the

bee-farmer, who has to consider the pasture and markets for honey of his neighbourhood. Taking the average of a run of years we reckon from 80s. to 40s. per stock hive is a fair and profitable return from bee-keeping—say £50 from thirty hives per annum. Some ten years ago a proposal was made in the *Times* to pit five hives against five acres of land with a view to test their productive powers in three years. If the challenge had been accepted the first year would have multiplied the five hives into fifteen, and from the fifteen hives during the last two years the greatest possible return of honey would have been aimed at. The system of management which we consider the best on the whole is the swarming one, which is the most natural and profitable, and is attended with less risk and labour than the other. One wing is taken from the queens of all the hives, so that they cannot go with swarms that fly away. Swarms without queens return to the mother hives.

When hives are ready for swarming they are swarmed artificially by drumming and driving two-thirds of the bees and the queens into empty hives. Artificial swarms thus made do as well as natural swarms. If the weather during the time fruit trees are flowering be fine, large hives at the swarming season are heavy—say 50 lbs. each. If they be only 40 lbs. each they contain a quantity of honey. In three weeks after swarming all the brood is hatched. The young queens come to perfection, and are ready to go off with second swarms before the end of three weeks—about four days before all the brood is hatched. We drive all the bees out of the old hives into empty hives on or about the seventeenth day after swarming; thus two swarms and a hive of honey are obtained at an early season from every stock hive. The honey is run and sold at 1s. 8d. per pound. This first harvest of honey realises a return of from 15s. to 25s. per hive according to the season. The second harvest of honey comes from the two swarms in September. In favourable seasons such swarms rise to great weights; in ordinary seasons they rise in weight to 40, 60 and 80 lbs. each. Almost every hive that will yield 20s. worth of honey is put down. In good seasons when hives rise to greater weights they are all put down and sold; two swarms in September are united in one hive and fed into a stock. This is our general system of management. In unfavourable seasons for honey the hives are multiplied by swarming, ten making twenty, fed into strong stocks, and thus prepared for sale and future work. The returns of bee-keeping after this fashion range from a trifle over the expenses up to £4 10s. per hive per annum—average profits, as has been said, ranging from 80s. to 40s. per hive. By various forms of the non-swarming system of management equally satisfactory returns have been obtained in some seasons and places; but the system we have indicated enables the bee-keeper to have his apiary filled with hives containing young queens, young sweet combs, and populations doubly strong in autumn. Besides, the swarming system enables the bee-master to have an extra number of stocks for sale.

We think the risk and labour is less on the swarming system. How many hives could an active skilful man manage single-handed? Probably more than any person in this country possesses. Old as I am, I could easily manage one hundred hives if all were within easy walking distance of my home. As it is, I have fifty hives to begin with this year, and these I expect will be wholly managed by myself without interfering much with my garden duties. Bee-keeping has been to me a source of pleasure and profit through life, and in the interests of working men I will here repeat what has been said by Cobbett, "That if there is anything more profitable to working men than a few swarms of bees, and more easily managed by them, I know not what it is." I hold that the Government would do well to encourage bee-keeping in this country, especially amongst the sons of toil. I believe that bee-keeping well understood would be a fruitful source of income to thousands of working people in the country, putting them in possession of what Burns calls "the glorious privilege of being independent." Bee-keeping considered as a commercial enterprise, and conducted on the lines of Mr. Raitt or the "RENFREWSHIRE BEE-KEEPER," will pay all expenses save that of hired assistance, and yield a profit of 100 per cent. on the outlay of capital, and not less on the lines of—A. FETTINGREW.

OUR LETTER BOX.

CONDITION OF HIVES (J. G.).—From the description given of your twelve hives we think they are in very good condition as to food and population; and though some of them are not full of combs, and though the bees in filling the empty spaces may build too much drone comb, you have, in our opinion, good reason to expect in good seasons a large balance of profit after covering all expenses. Fear not that your hives are too large. Your neighbours who are positively certain that you have made a mistake will change their opinions and copy your example. First honey season you will convert all the bee-keepers in your locality. You cannot help your bees much in cold wintry weather. As soon as the weather becomes mild in February give them a little warm food and cover the hives well to induce breeding. Your hives have rather too much food stored up, which drives the bees to the points of the combs, and makes them cluster there. Therefore, in feeding do not give the bees enough to keep them from their stores—just enough to stimulate into action. As you want to multiply your stocks take swarms from six of them and super the rest. If your neighbourhood is a

good one for honey, and the coming season be favourable, you will probably have a large harvest of honey.

THINGS THAT MAY BE AMIS WITH BEES IN WINTER (E. T.).—We are asked to explain what is likely to be amiss with hives at this time of year. 1. A heavy fall of drifting snow will sometimes cause bees to perish from the blocking-up of the entrance, so preventing due ventilation, as well as from the invasion of damp when the thaw comes. 2. High winds will often displace the coverings, and cause the rain or melting snow to find an entrance from above as well as from below. 3. Often two masses of dead bees will accumulate on the floorboard, choking up the entrances, causing a double first, a pestilential exhalation which often occasions dysentery, and renders an impossibility for the bees to fly abroad to void their excrement or to remove their dead. 4. Insufficient supplies of food in prolonged winters not seldom starve the insects. In such cases, of course, at all risks food must be given if they are to be kept alive. 5. Mice are great plagues in straw hives, or, indeed, in any hives with too large entrances. They will often eat away the entire comb, thus starving out the bees.

LARGE STRAW HIVES (Idem).—We have used very large straw hives in former years, which we employed a neighbouring straw basket maker to construct with shuttered windows, such as you ask for. If you put yourself into communication with Mr. Pettigrew of Sale near Manchester, describing the size and pattern you prefer, he will supply you with the article at the most reasonable price, or put you in the way of procuring them. For our own part, not being "cottagers," we prefer large hives of wood, and, after experience of many sorts of hives, recommend them; but we make them ourselves for our own use only.

SMALL SUPERS (G. T.).—Abbott's 2 lb. super is $7\frac{1}{2}$ inches long, $4\frac{1}{2}$ inches deep, and 2 inches wide inside measure. One-half the capacity would hold about 1 lb., but the bees do not always store exactly the same quantity of honey in supers of the same size.

WEEDS IN FIELD (C. J. A.).—So far as we can judge from the dried specimen you have sent us, the weed is *Scirpus fruticosus*, which grew with unusual freedom last year in consequence of the cold wet season. By thoroughly working and scarifying the land in the spring so as to get all the weeds possible out of it and burning them, and by securing a fine fifth, and sowing seeds of perennial rye grass and clover thickly, we think you will succeed in securing a good pasture. Much, however, depends on the weather in spring for cleaning the land. If you can get most of the weeds out of it you may, as you particularly desire it, dispense with a turnip fallow with a reasonable chance of succeeding in your object.

COATHE OR ROT IN SHEEP (R. T. C.).—In reply to the query, "Exists there any medicament that will reach the cause of the disease in rotten sheep?" we reply that the only way in which it can be reached by palliatives is that in which salt plays the principal part—that is to say, there is as yet no remedy by which the flukes found in the liver of sheep have ever been known to be expelled by medical treatment and saved the life of the animal. Having been connected with the practical management of sheep for more than fifty years, and having at various times purchased rotten sheep and used all the remedies that have been recommended by the professors of cattle pathology, and also those prescribed by the writer's father who was a most eminent surgeon, these have all turned to no account in the object of curing the rot in sheep. We have, therefore, for a long time regarded the disease as incurable. But we still acknowledge that a preventive is better than a cure, and have recently turned our attention to this object only, and in furtherance of it we furnished articles in these columns on the 11st of July and 7th of August last, at pages 96 and 116. We, however, recommend you to read the elaborate article contributed by Professor Simonds in the *Journal of the Royal Agricultural Society of England*, vol. xxiii. for 1897, upon this subject.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. $51^{\circ} 32' 40''$ N.; Long. $0^{\circ} 8' 0''$ W.; Altitude, 111 feet.

DATE		9 A.M.					IN THE DAY.						Rain.
1880.	Baromet- er at 35 feet Sea Level	Hygrome- ter.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature.		In sun.	On grass.		
Jan.		Dry.	Wet.			Max.	Min.	deg.	deg.			deg.	
Sun. 18	Inches.	deg.	deg.	W.	deg.	deg.	deg.	deg.	deg.	deg.	deg.	In.	
Mo. 19	30.583	30.4	36.4	W.	35.3	37.0	24.5	52.5	62.5	19.5	20.7	—	
Tu. 20	30.435	32.7	32.7	S.W.	34.0	32.4	19.6	35.5	55.5	16.1	—	—	
We. 21	30.435	35.3	34.3	W.	33.5	33.5	20.3	35.5	55.5	16.1	—	—	
Th. 22	30.378	38.3	37.6	W.	33.4	38.6	25.4	67.9	24.5	—	—	—	
Fri. 23	30.456	35.0	34.0	N.	33.3	38.6	27.5	45.3	36.0	—	—	—	
Sat. 24	30.454	34.4	31.0	N.	33.4	38.3	32.5	—	—	—	—	—	
Means.	30.418	34.4	37.5		33.9	36.3	25.1	50.8	51.3	0.010	0.010		

REMARKS.

18th.—Slight fog in morning, fine day, sun shining all day but very cold.
19th.—Sharp frost, very clear sky, bright sunshine from sunrise to sunset; bright moonlight night.
20th.—Very cold, but fine day with bright sunshine; bright moonlight night.
21st.—Severe frost, foggy morning, dull overcast day, foggy again in evening.
22nd.—Clear, bright, cold day, cloudy for short time with a little snow at 0.30 P.M.; very fine afternoon, bright moonlight night.
23rd.—Fair but overcast, damp day, warmer misty evening.
24th.—Very dark all the forenoon; finer after 5 P.M.; clear cold night.
Not quite so foggy as the previous weeks, but much colder; in fact a very cold week with intense frost on the grass.—G. J. SYMONS.

COVENT GARDEN MARKET.—JANUARY 28.

ALL classes of vegetables have again become scarce, the frost checking the supply considerably, and importations from the continent are short for the same reason. Trade remains quiet, though there are indications of an improvement.

WEEKLY CALENDAR.

Day of Month	Day of Week	FEBRUARY 5-11, 1880.	Average Temperature near London.			Sun Rises.	Sun Sets.	Moon Rises.	Moon Sets.	Moon's Age.	Clock before Sun.	Day of Year.
			Day.	Night.	Mean.	h. m.	h. m.	h. m.	h. m.	Days.	m. s.	
5	TH	Royal Society at 8.30 P.M.	43.7	31.5	39.6	7 35	4 43	3 37	11 5	26	14 13	26
6	F	Dr. Priestley died, 1804, æt. 61.	46.5	32.6	39.6	7 33	4 55	4 44	0 a 5	28	14 18	27
7	S		44.9	33.0	39.9	7 32	4 57	5 37	1 19	27	14 23	28
8	SUN	QUINQUAGESIMA.	45.6	32.0	38.8	7 30	4 59	6 17	2 41	28	14 25	29
9	M		45.3	31.6	38.4	7 28	5 1	6 47	4 6	29	14 27	40
10	TU	Annual General Meeting of the Royal Horticultural Society of Arts at 8 P.M.	44.9	30.1	37.5	7 26	5 2	7 9	5 28	●	14 28	41
11	W		44.5	29.5	37.5	7 25	5 4	7 28	6 48	1	14 29	42

From observations taken near London during forty-three years, the average day temperature of the week is 45.6°; and its night temperature 31.5°.

WHEN TO SOW AND PLANT IN LATE DISTRICTS.

IN the following remarks I mean by late districts those high-lying exposed tracts north of the Trent. Our district is a late one, lying on the northern borders of Cheshire and Staffordshire. Many amateurs, and in some cases gardeners, adhere closely to certain dates in all their operations; but experience gained in one part of the country is almost useless in another regarding the time and dates of sowing or planting. All calendarial instructions relating to these points given to suit one locality are often quite unsuitable for another. For instance, it would not be safe here to plant our earliest Potatoes before the middle of March, and that is considered very early for this district. In fact, it is a standing rule with the cottagers in this neighbourhood to make the first planting after Good Friday. The end of April is quite early enough for planting late crops; indeed many large breadths are not planted until the first and second week in May, and good crops are generally the result, for the growth starts strongly at once and is not seriously checked afterwards.

The earliest Peas are frequently recommended to be sown in November. November sowings are impracticable in this district. Autumn sowing is largely practised in the neighbourhood of London and further south with success, but in the north of England sowing in the open ground is not profitable till February or March. In late localities the first dish of Peas can be obtained from plants that have been raised in pots, the seed being sown in March, and the plants put out early in April. April is early enough for the first sowing of wrinkled Marrows, if sown earlier here the seed decays in the ground. Dwarf Kidney Beans are an uncertain crop in late districts. Our crop of the past season was a complete failure through the effects of the cold wet weather. Scarlet Runners are often recommended to be sown during the beginning of April. This date no doubt holds good in the south, but here and further north a sowing made early in May is not to be depended upon. Last season we made no attempt to sow outside, the ground being so wet and cold that the seed would have perished. We sowed the seed in pots and planted out at the end of May, and were rewarded for our trouble with only one dozen dishes of Beans, when the first sharp frost cut all down.

The Onion is another important garden crop. The end of March we find sufficiently early for our first sowing, and farther north we have seen sowings made at the end of April, which resulted in good crops. Perhaps more failures occur in sowing Carrot seed than in most other crops in a cold wet season like the past. Carrot seed lies long in the ground before germinating in dry seasons, but if the ground is cold and wet very often the greater portion will decay. Turnips differ much from Carrots in that respect. Turnip seed is not so soon affected; it will remain in the ground a long time, but will soon germinate when the temperature increases, but if sown too early the greater number of the

plants are liable to run to seed. Beet seed can be safely sown in March in late localities, but in more favourable districts it is better sown in April or May, as the plants are liable to run to seed if sown earlier. There is no more important crop than Parsley, which is always in demand throughout the year. When the autumn sowing fails it is important to make spring sowings as soon as possible; indeed it is often very advisable to sow in pots or boxes, and transplant the seedlings. Seed sown in the open is long in germinating, especially in unfavourable weather, so it is an advantage to sow as soon as the soil is in good condition.

We now come to those important vegetables, Cabbages, Cauliflowers, Broccoli, Brussels Sprouts, &c. The first outdoor sowing of these we make in a somewhat sheltered corner about the middle to the end of February; earlier sowings are made in boxes and placed in moderate heat. Cauliflower seed is sown in a box at the end of January, and when the plants are large enough they are pricked out 3 inches apart into boxes of soil, and after being carefully hardened off are planted out during the first week in April. These produce heads ready to cut the first week in June. Plants raised in this way are far superior to any that are half killed by the winter, receiving checks that cause them to turn in prematurely, "buttoning" as it is technically called. It is advisable to make a small sowing in autumn for producing heads in April and May. I adopt and strongly recommend the system of potting the young plants from the seed bed, employing 3-inch pots and a very light rich soil. During the winter the plants are kept in a cold frame plunged in half-decayed leaves, as such a congenial material maintains a uniform temperature and moisture at the roots. In this way if kept dry the young plants will bear severe cold without being injuriously affected. Air is admitted on all favourable occasions by tilting the lights, and covering is only applied in the case of continued severe frost. In March they are planted out with care, and as the roots are not mutilated the plants do not receive the slightest check. Brussels Sprouts cannot be raised and planted too soon, for the longer the growing season the better the crop.

We now come to crops the seed of which is sown in autumn, and it will be observed that the reverse rule from that relating to spring sowing holds good in late districts. Early Cauliflowers if sown in the north later than the end of July are not so good as desirable by the time they should be in their winter quarters, but in early localities sowing about the middle of August will be found safe. Seeds of winter Lettuces, Tripoli Onions, and Cabbages require to be sown as early as Cauliflowers. We often have very sharp frosts late in March; when such is the case Cauliflowers are better left in frames till April. That important crop Prickly Spinach we sow early in August, but this sowing is not always to be depended upon, especially when a mild autumn follows, so we always sow again about the end of the month. Early sowing may be done in early seasons, but these are the exception and not the rule; and this spring especially, as the ground is unusually cold, and in many districts saturated; as seeds, too, as a rule, were imperfectly ripened last year in consequence of the dull and wet summer,

rather later sowing than usual will be the safe plan for ensuring free germination and good crops. Instead of seeking to secure early produce by sowing such crops as Cauliflowers, Brussels Sprouts, Peas, and Dwarf Kidney Beans early in the open ground, it will be far preferable to sow the seed thinly under glass and transplant afterwards in sheltered positions. As plantations of Cabbages are so extensively killed a little seed of an approved early variety sown now in boxes will, good cultural attention being given to the plants, enable a crop of considerable value to be provided during the early summer months.—J. LLOYD JONES, *Cheshire*.

THE NATIONAL ROSE SOCIETY'S SCHEDULE.

I DO not think there is a safer rule for the management of the affairs of a society than that, when a question has been once decided, it is better not to reopen it again until it has had a fair chance of being tried. How very seldom in the affairs of our greatest assemblies, the Houses of Lords and Commons, is a question reopened after it has been debated and decided upon; and although it is only *longo intervallo* that we can compare our infant Society to such august assemblies, yet we do well, I think, to follow the example. I therefore must dissent from the views expressed in my excellent friend "A. C.'s" letter on page 77; while I must remind him that the matter in no way rests with me, for that my colleague and myself can only be the mouthpiece of the Committee, whose servants we are, and that therefore were my opinion as decidedly in favour of the views he adopts as the reverse it would not help him in the least. The meeting to which he alludes finally settled the schedule for this year, now in the printer's hands, and I fear for the present "A. C." must endure the hardship (?) of seeing Cheshunt Hybrid banished from the Tea and Noisette class.

But is it a hardship? I am not an exhibitor, and therefore do not know the exigencies to which he alludes and the wonderful usefulness of Cheshunt Hybrid. I can quite believe it; but for all that I do not think it a great loss. Cheshunt Hybrid is unquestionably a useful garden Rose, but I have never seen a box of Teas improved by it in my judgment; nay, I have often wished, when I have seen an otherwise charming box, to have been able to have taken it out and substituted another Rose for it. Moreover its origin is doubtful, and I have heard it very strongly asserted that it has no Tea blood in it at all, an opinion in which I do not, however, agree. But, again, I do not see the hardship of excluding it from a class to which it is allied by one parent. On the father's side it is a Hybrid Perpetual, and there seems to me no more hardship in shutting it out from the class to which it belongs on the mother's side than there is in confining the other hybrid Roses—Hybrid Perpetuals, Hybrid Chinas, Hybrid Bourbons—to the class of any variety. And so again with Mr. Bennett's Roses. "A. C." will probably recollect that at that meeting one of these was spoken of by one grower as not having an atom of Tea blood in it that he could see. I have often seen flowers exhibited in other classes which were said to be crosses, but in which it was impossible to detect the existence of any blood from the second parent. And herein will be the difficulty. Roses will be credited as Hybrid Teas which will not be hybrids at all, so that it will not be easy to determine so knotty a point.

With regard to Mr. Oliver's prize, I think the intention was to confine it to Tea Roses, but as Noisettes are generally included with them I do not think they will be shut out from this class. Your correspondent is in error with regard to the prize for suburban Roses. It was not, as far as my recollection goes, awarded to any person living at Twickenham or Teddington (are they more than eight miles from Charing Cross?), but to Messrs. Denison of East Sheen. I quite agree with him, ten miles would be too far; and as the two last seasons have hardly given a fair trial to the class we may, I think, reasonably hope that it will be better represented this season.

I may add here that I have to-day received a letter from M. Camille Bernardin, in which he informs me that the whole of the standard Roses in Brie are killed, and that he is afraid that those with dormant buds are also destroyed. Dwarfs where protected by the snow have as yet escaped. He truly calls it a "veritable disaster." I very much fear some of our English growers will have to record very heavy losses also. It is seldom two such winters follow in succession.—D., *Deal*.

PACKING ROSES AND FRUIT TREES FOR THE ANTIPODES.
—In reply to an inquiry in your Journal, No. 981, of Mr. Tom

M. Brooke, relative to packing Roses for New Zealand, the roots should be packed in damp moss with an outer covering as impervious to the air as possible. The late Mr. Thomas Rivers says in his remarks on Roses for exportation:—"Roses and fruit trees can be sent to the most distant colonies without hazard." The following is an extract from a letter received from New Zealand:—"The trees reached me on July 1st, and were immediately planted. Of the forty-four Apple trees only three were dead. Several of them have fruit blossoms, and will bear next year. They have put forth most vigorous shoots. Roses or trees for New Zealand, India, and Australia should be shipped in December."—H. C. F.

CLETHRA ARBOREA AS A WINTER-FLOWERING PLANT.

HEREWITH I send you a few flowering sprays of the above-named plant. We have had abundance of such from several plants here since the beginning of November. They are growing in an unheated house where the temperature has ranged during that time from 25° to 50°. Frost, the absence of sun or artificial heat, does not prevent them flowering. As you will see, the sprays may be included amongst the choicest of flowers. I think the plant deserves to be brought into notice, as I do not know of any other which will bloom so long in winter or produce the same number of flowers under the conditions I have just stated.—J. M.

[The sprays received are extremely beautiful, resembling at a short distance large bunches of Lilies of the Valley, and must be very valuable for vase decoration in winter. They are well represented in the figure on page 131, vol. xxxvii.—EDS.]

MUSHROOM CULTURE.

THOSE who are in a similar position to myself as regards out-of-door vegetables will be able to fully appreciate the remarks of Mr. W. Taylor on page 87 relative to the great value of Mushrooms at this season. With the exception of Spinach, Brussels Sprouts, and a few Drumhead Cabbages we have no green vegetable in use at present. Under these circumstances the value of Mushrooms is greatly enhanced, and this has been the first winter that I have been able to keep up a continued daily supply.

My greatest trouble has been with the structure in which they are cultivated. The first summer I was here the desirability of a continued supply of Mushrooms during the winter and spring months was laid before me. There was no structure for the purpose other than a partly underground portion of the tool shed, which had been boarded over, and along one side of which the flow and return pipes, which heat some of the plant houses, pass. These pipes are built in with a brick on edge, and covered at top with old flue covers. This place had been previously used for Mushroom-growing, but with so little success that their culture had been discontinued as unprofitable. However, it was thought worthy of trial again; and a couple of beds, one on the ground and another on a level with the flue covers, were prepared on one side, while on the other side beds were formed in the same way, only, however, as far as one of the windows, the remaining space being left clear. From the beds on the latter side we obtained Mushrooms readily till about the middle of November. After that date they could not be induced to grow. One reason for this was the coldness from the outside, and another, which was more fully shown last winter, was the rain drainage, which made its way through the wall and into the beds. From the beds on the other side we had the greatest success, the chief cause of subsequent failure in the case of these beds being the too large amount of drying heat derived from the pipes. Last winter, owing to the extreme cold and consequent increase of heat in the pipes, the beds failed on this side also, so that it had now become, as in previous years, hardly profitable to try to produce Mushrooms in this structure. However, as the reason of failure was evident—too much heat close to the beds on the one, and too much cold and wet on the other side of the cellar—instead of going to the expense of a special building for Mushroom-growing I tried the plan of removing the old beds, and making only one series down the centre of the building, leaving a space of 2 feet between the enclosed pipes and the beds, a pathway of double the width being left along the other side. The beds are between 6 and 7 feet wide and 27 feet in length, and these beds, with not half the trouble,

have come into bearing regularly. So much for this part of the subject.

Now as to the material for the beds. The stables are at too great a distance from the gardens to bring the droppings in barrows, so I had a cover made for a small cart, but could not induce the men to always keep it in its place, so that latterly I have had three loads of droppings and litter brought as required. Sometimes it is in pretty good condition, at others quite wet, but we manage it accordingly. If in a moderately dry condition it is easily brought into working order; the fresher it is the better. In the case of wet droppings they are spread out thinly and turned very often. A few days before it is intended to make up a new bed a third of perfectly dry material is mixed with the droppings, and the whole thrown up into a heap to heat. Sometimes dry soil, at others very dry material from an old bed, and, when they are to be had, dry turves are used for this purpose. A bed was made of some particularly wet material on the 9th of January. In this case dry Beech leaves were mixed with the dung, and the bed was made up quite firmly. On the 13th the bed was spawned, but instead of being inserted just underneath the surface of the bed it was laid upon the surface, and the driest portions of a bed going out of bearing were loosely thrown over the whole just sufficient in quantity to cover the spawn. A thick layer of straw was immediately laid over the bed to preserve the heat and keep the top covering from drying. On the 20th, when examining the bed for the purpose of covering it with soil, the spawn was spreading freely. Had the bed been made up and spawned in the usual way it would most likely have proved a failure, whereas by my treatment I hope in a short time to have a crop as good as on other beds.

After the beds are soiled straw is occasionally used in order to bring them into bearing quicker; but I do not like it, as it invariably brings the spawn to the surface, and unless a little soil is sprinkled over the whole the Mushrooms are small. Mushrooms grown under straw are, further, not nearly so firm as those grown on the open surface. Here I differ greatly in my experience from that of Mr. Taylor; for whereas he finds the admission of air inimical to Mushrooms, I always obtain the finest quality when the weather is such that air can be admitted during the night. Damping is occasionally resorted to, but very seldom, as we find the moisture arising from the beds sufficient for the well-being of the produce. I find a temperature of 50° to 53° suits Mushrooms very well. I find a remarkable difference in spawn. A bed is occasionally spawned from the material of another in full working. Mushrooms are such an expensive crop that it behoves one to save in such a manner when it can be done without endangering the crop.—R. P. BROTHERSTON.

STOCKS FOR ROSES.

It cannot be too often repeated, because neglect of the fact is the chief cause of failure in growing Roses, that the Manetti is only suitable for rich loamy and light soils. It will not do for stiff heavy land and clays, whilst the Briar is not suitable for light or ordinary black garden soils, but is best adapted for stiff, cold, and clayey land. This is what I stated before, and if people would only bear it in mind when planting I feel sure we should hear less about the failures of stocks; but they do not give it a thought. They read that one correspondent recommends the seedling Briar as the best stock, and another the Manetti. Well, what do they do? Jones, whose land is light, orders Roses on the seedling Briar and is disappointed. Brown, whose land is stiff clay, obtains them on the Manetti and is equally disheartened; whilst Robinson, whose land is also clay, orders them both on the Manetti and seedling Briar, and finds the former fail, but those on the Briar grow first-rate, so he straightway rushes into print and lauds the seedling Briar all he can. All this might be avoided by employing each stock most suitable to the soil.

As to the absurd idea that the seedling Briar exercises great influence on the form, colour, size, and fullness of the blooms, let me say once for all that it is all nonsense. It is the novelty which causes such statements to be written; and like anything new, 50 per cent. of the people go into ecstasies over it, about 10 per cent. only use ordinary common sense, and the rest go with the majority. Writers should be very careful in extolling different stocks to state the conditions under which the plants are grown. How many people, I would ask, could tell from one hundred Rose trees taken up, dressed, and mixed which were on the Manetti and which on the Briar? And as to any-

one being able to tell from the blooms which stock they were grown on, no one dare risk such a thing; whereas if the seedling Briar did exercise such influence as some writers say it does, any novice could tell.

After these remarks I ought perhaps to give my opinion again on stocks. For suitable soil I do not think any stock surpasses the Manetti. It has been thoroughly tested, is perfectly hardy—equally as much so and perhaps more than the Briar, is easily managed, does not throw up root-suckers, bears removal the best of any stock I know, but is not suited for Tea-scented varieties. The de la Grifferais is, I fancy, suited for similar soil to the Manetti, makes abundance of roots, suits Tea-scented Roses well, but is not hardy. The Briar is well known; it likes strong land, suits nearly all Roses, does not bear removal well especially after non-removal for some time, but its natural habit is to throw up suckers from the roots, and whether standard, seedling, or cutting, it will always have this tendency. The Celine stock is very good, suits vigorous growers well, is quite hardy, and I have not found it throw up root-suckers. The Boursault is I think excellent, perfectly hardy, remarkably vigorous, suits both Teas and Hybrid Perpetuals, grows well on either light soils or clay, bears removal well, and does not, so far as I can see, throw up root-suckers. I like it best of all.—F. BOYES.

GALVANISED WIRE.

I HAVE twelve houses fitted with galvanised wire trellises unpainted, three of which are Peach houses and four are vineries; the rest of them at present contain Cucumbers, Cape Gooseberries, Tomatoes, Stephanotis, and Bougainvillea. No precaution is taken to prevent the plants coming in contact with the wire, and in most cases they actually lie on it, having ties only to prevent them moving sideways. Seven out of the twelve houses have had the trellises fixed since I took charge of them, and the galvanising was not all done by one firm. I have never seen an instance here of a shoot being injured by the wire which I could not trace to pressure owing to faulty training. For this reason I have been inclined to treat the subject lightly whenever it has been broached by the horticultural press; but when such a man as "NORTHERN GARDENER" says the subject is a serious one, and such a close observer as Mr. Simpson cites instances of trees receiving injury from simply touching the wire, the subject can no longer be ignored.

I have said above all I can say about the practical part of the business, and now for a little theory. We know that zinc is a very sensitive metal. We know, too, that different samples of water vary very much when analysed. Is it not possible that some of the samples of water contain that which would act on the zinc and render it noxious to vegetation? The atmosphere of the neighbourhood in which Mr. Simpson lives is notoriously far from pure, and it may be that the rain will bring down with it at times sufficient of a certain chemical ingredient for the purpose indicated. But I have reason to believe that some samples of spring water will act detrimentally on zinc, as the following will show. The water for drinking at my cottage is brought in galvanised buckets from a spring at a little distance. I know nothing about the chemical contents of this water, but it is extremely soft to wash with, and makes a good lather with a very little soap, so that it cannot contain much lime. When it is fresh from the spring it is also very pleasant to the taste—not sufficiently so as to tempt me to exclude all other liquids, but still I can enjoy a glass of it occasionally. It will keep good for a reasonable time if it is at once emptied into an earthen pan which we use for the purpose, but on several occasions I have taken some from the bucket after it has been standing an hour or two and I could not drink it. Of course we know that fancy goes a long way in such matters, but I have endeavoured to shake off all fancy, and have been obliged to come to the conclusion that the water kept in the earthen pan and that in the bucket were not alike in taste. In addition to the evidence of taste the buckets are not long before they show signs of rusting, although no friction whatever is resorted to, they being used solely for cold clean water.

I do not think that instances of trees grown outside and trained to galvanised wire, where they are subjected to all extremes of temperature, should count for much, unless there is some other wire at the same time exactly under the same conditions and supporting the same kind of plant. I should fully expect tender trees, as Peaches are, to suffer more from

extremes of temperature when trained to metal than they do on wood or a good thick wall.—WILLIAM TAYLOR.

I HAVE used galvanised wire for ten years without trees ever receiving any injury; it is not painted and never need be, the whole secret is in tying. Always put the tying material round the wire first, so as not to tie the shoot on the wire, but to have a non-conducting material underneath. Tie loosely, and take care that there is room for the shoots to grow without bending. I use as a rule common soft string, such as is used in Yorkshire for mending sheep nets, &c., made of hemp, but bast mats and any of the fibrous materials from palms, or reeds do equally well. Paint will not cure the evil complained of; it arises simply from cutting the bark by friction and by too great changes in temperature which wire is subject to. In cases where the injury is done, I recommend in larger branches a sharp knife to cut away the injured wood and bark, then to put grafting wax round the wound till it heals, or an india-rubber band.—C. P. P.

IN answer to your correspondent "CIVIS" (page 58) as to what he had best do with the cankered shoots of his Peach trees, my advice would be that which I have practised myself in a similar case. Here we have several Peach trees trained to galvanised wire. Last autumn in looking over the trees I found that where the shoots had come in contact with the wire they were more or less injured. I at once cut out below the cankered part the shoots most affected. At the general pruning I intend to take out as many more of the affected shoots as I can spare; and those that are likely to carry a crop of fruit next year will be allowed to remain (I mean those slightly damaged) until new growths can be trained in their stead. I have been advised to paint the wire, which I am doing. With this, and placing some soft material between the wire and the shoot where there is likely to be pressure, I hope to avoid this evil another season. When this discussion was going on in one of the horticultural papers some time since, one writer assumed that the shoots on the trees had been too tightly tied, thereby causing the damage; but in my case this was not so, as I found many shoots badly cankered that were quite loose within the tying material and simply resting on the wire. I should imagine that in the case of "CIVIS," his trees being young and vigorous, that possibly the shoots may have grown much stouter than the operator had supposed when tying the trees, as he says, "Several branches almost as big as my little finger were almost eaten through." In my case they are chiefly old established trees; but on one or two young trees and the shoots strong I found them as above indicated. It is not safe to use galvanised wire unless it is coated with paint, or something is placed to keep the shoots from coming in contact with the wire.—R. D. LONG, *Thornes House, Wakefield.*

MY experience of galvanised wire for Peach and other fruit trees has always been attended with satisfactory results. It may be assumed with a moderate degree of certainty that in nine well-managed gardens out of every ten this wire is extensively and successfully employed. With this fact before us we may conclude that the injury sustained by your correspondent's Peach trees is attributable to an error in their cultivation. I think the gumming or canker referred to by "CIVIS" on page 58 has been caused by an over-rich border and too close tying. Vigorous young trees brought in contact with the wires and tied sufficiently tight to prevent them swelling is a certain cause of this serious injury. I have noticed, too, that young Peach trees planted in a rich border are more susceptible to injury from slight wounds than are those planted in a border of almost pure loam, and are furnished with medium-size short-jointed wood. I recommend "CIVIS" to prune the wounded branches of his trees to a point immediately under the lowest wound; this will cause healthy young shoots to appear, which must be trained so as to fill up the vacancies. By all means avoid close tying, and see that no part of the tree is pressing heavily against the trellis.

With regard to the case of Mr. W. A. Bois, I suspect the injury was caused by the scorching rays of the sun at a moment when the house was not sufficiently ventilated, and perhaps in addition the Vines were too dry at the roots.

I have known fine specimens of *Clerodendron Balfourianum* perish on galvanised wire trellises, the wire in these instances being abused for bringing about such a result; while the actual cause of death was, suddenly drying off the plants, removing them from the stove, and placing them in a dark and compar-

tively cold shed. This operation was called "resting" the plants.—A. R. COX, *St. Michael's Hamlet, Liverpool.*

SUTTONS' WOODSTOCK KIDNEY POTATO.

THIS handsome kidney, although classed as a second early, will when fully known prove itself valuable as a first early and for forcing purposes. I have this day, January 27th, begun sending in for table new Potatoes of this variety. They were grown under the following treatment:—Potted in the autumn in pots of various sizes in loam and horse droppings, and placed on a shelf in a house devoted to succulents, with a temperature ranging from 45° to 70° with sun heat. I was agreeably surprised when I examined them to find Potatoes ranging in size from a pullet's to a bantam's egg, and not like some early forced Potatoes watery, for here we have quality and quantity combined, and a dish highly prized for the dinner table.—J. CLARKE, *Melton Constable.*

THE FUTURE OF EPPING FOREST.

[Abridged from a paper read by Mr. William Paul, F.L.S., at the meeting of the Society of Arts on January 28th.]

I MUST at the outset beg of you to consider the remarks I am about to make as suggestive rather than exhaustive, as dealing with the general rather than the particular; for I conceive that this, if not the only way, is at least the best way in which the subject can be handled before a meeting like the present. Nay, I would go further, and assert that no precise or definite rules can be given as regards the execution of details which might not be advantageously broken through or ignored under varying circumstances. There is here an unrestricted field for the exercise of taste and genius, and those great qualities of the human mind must not be "cribbed, cabined, or confined" by rules.

Although thoroughly acquainted with every part of the Forest, having in early life traversed its open spaces on foot from "morn till dewy eve," and searched its glades and thickets for the numerous and varied botanical treasures which they contain, I yet approach the subject with diffidence, so many features of interest and importance *in esse* and *in posse* presenting themselves which it would be well to develop, create, embody, and maintain. It will, however, clear away a host of difficulties if we keep in view the fact that the Act of Parliament declares that Epping Forest must remain a forest. It must not be converted into a garden, an arboretum, or a series of arboreta, a park, or a series of parks—in imitation of the many beautiful but comparatively restricted surroundings of the residences of our English nobility and country gentlemen.

Before proceeding further it may, perhaps, be well to give a tabular view of the line of argument which I intend to follow, in order to place my opinions on this question distinctly before you. (a), The Forest proper (unenclosed):—1, Scenery; 2, the Ground; 3, Roads, Rides, Avenues, and Paths; 4, Turf; 5, Water; 6, Clearing and Planting; 7, Trees; 8, Shrubs and Plants; 9, Animals and Birds. (b), Recreation Grounds (enclosed). (c), Lodges.

1, *Scenery*.—The scenery of Epping Forest as a whole is hardly of a character that can be correctly spoken of as sublime or beautiful, although beautiful spots may occasionally be met with, and it possesses the elements of both picturesqueness and grandeur. It would, perhaps, be correctly described as a tract of woodland and pasture, the surface broken into hill and dale, interspersed with a few fine trees and groves; the old trees possessing a rare and glorious beauty, but not being numerous or prominent enough to impart dignity to a Forest of 6000 acres.

2, *The Ground*.—From my knowledge of the ground I feel little hesitation in submitting the opinion that no improvement adequate to the outlay could be effected by extensive alterations of the surface. Here and there, doubtless, there may be holes to fill in and ugly knolls to reduce or modify, but the general surface of knoll and glade, of dingle and dell, should in my opinion remain undisturbed. The scenery of Epping Forest is, as we have already said, that of a quiet English pastoral character, and such it should remain. There are no mountains to awe as in some of our northern forests, no rocky surprises, and to attempt to realise such could result in nothing better than a feeble imitation of the sublimer scenes of Nature with which most of us are more or less familiar. I would not therefore attempt to alter the surface of the ground. Draining, however, is a very important matter, and this should, I think, be sedulously attended to. A single visit to the Forest would satisfy anyone on this point. At present it is impossible in winter, or even after rain in summer, to walk any distance without encountering bogs or wet places, which not only interfere materially with the free progress and comfort of the pedestrian, but by entailing the consequence of wet feet may prove prejudicial to his health. One of the first efforts of active labour should be to lay the wet places in the Forest dry. If bogs must be preserved for the sake of the aquatic or semi-aquatic plants which grow in and around them, let them be few in number and in positions

where they will not interfere with the enjoyment of the public.

3. Roads, Rides, Avenues, and Paths.—It may seem scarcely necessary to dwell on the importance of wide, dry, solid roads through a track of land which from north to south is some twelve miles in extent. There are, however, some of the most beautiful parts of the Forest situated at some distance from the present carriage roads which it might be well to open to the view of invalids and those who are past the period of life when walking is one of the ordinary sources of recreation and enjoyment. Rides (for saddle-horses only) would also be a most useful and enjoyable feature in any scheme, and could be worked out at no great expense. Whether of grass or sand they should be sheltered and shady, and these conditions may be secured by the formation of vistas and avenues. Avenues afford a fine opportunity for the introduction of rides, but they should not be in too prominent a position, and should be upheld or supported by being placed in immediate contact with large breadths of forest woodland. Walks or paths innumerable already exist, many of them probably rights of way; others, which are but little used, seem to be merely short cuts from point to point. These are for the most part in a state which admits of great improvement by clearing, mending, and draining. Not that I would advocate the clipping and levelling met with in garden hedges and walks, but there should be no hindrance to the free passage of the pedestrian. This accomplished, the more intricate, the wilder, and more varied the surroundings the greater the enjoyment. Although recommending the opening of parts of the Forest by roads, the formation of rides, and the clearing and mending of paths, a jealous watchfulness should be exercised over their multiplication. There should be good and strong reasons for every new road, ride, or path, as a needless or useless repetition of these would deform or impair the grandeur of the Forest.

4. Turf.—Green, soft, springy turf is so agreeable to the eye and so pleasant to the feet in summer that it is well worth the utmost consideration. There are already many such green spots which require little more than drainage to make them enjoyable, and they should be increased in number in suitable positions as opportunities occur.

5. Water.—The life and importance which water gives to forest scenery is so great that it ought to abound everywhere. Epping Forest, from the nature of its surroundings, cannot have its Loch Lomond or its Ullswater, but there is no reason why it should not have its lake or lakes, which, if partaking less of the sublime, need not be less picturesque, and may, by the power of art, be made strikingly beautiful.

6. Clearing, Pruning, and Thinning.—I am of opinion that while we do not want to change the Forest into a landscape garden, or a garden of any kind, we yet want the experience and skill of the landscape gardener to clear away the superabundant rubbish now painfully prominent, while scrupulously preserving every visible or hidden rudiment or germ of beauty in which his practised eye and mind may discern a capacity of extension and development. I would, in the first instance, preserve every tree or shrub that is worth preserving, merely clearing away what was unmeaning, unsightly, or ill-placed—reducing confusion to order, in doing which there is room for the exercise of the most correct taste and the most mature judgment. This much accomplished, the horticulturist should step in to make the most of the existing trees, and to add such native and exotic as may seem desirable. Many of the former are at present but poorly developed, and others have been injured beyond recovery by reckless lopping. With regard to these pollard trees, the result of lopping, they are, I think, for the most part formal and uninteresting; but judicious pruning and thinning would in a few years add many feet to the stature of the unpruned trees, and do much to convert the present vast tract of monotonous wood and waste into a veritable and beautiful forest.

Planting.—We now come to a very important part of the work in hand—planting, with regard to which there is likely to be a great diversity of opinion. The ground I take up is that trees—wood and lawn—single trees, groups of trees, groves, avenues, thickets, interspersed and relieved with open glades and wide stretches of pasture, are to be grand distinguishing features of the Forest in the future. Epping Forest differs from most English forests, inasmuch as its soil is generally highly favourable to the growth of trees. There is, in fact, every description of soil—sand, gravel, peat, loam (light, medium, and heavy), and clay—so that the requirements of almost every tree and shrub may be met and satisfied. A certain amount of planting is doubtless necessary, and it is highly important here that the right trees should be put in the right places and in the right soil. They should not be planted in formal clumps or groups, but thrown together in suitable positions in large irregular masses, the outlines, so to speak, being broken into bays and promontories. But if we clear away we must in some instances replace. The Forest must be clothed, and with what shall we replace? The answer to this question is, Any or all the British forest trees, and such exotic trees only as are known to endure the rigours of an English climate. While preserving the general character of an English forest I would not

altogether eschew those exotics which are thoroughly hardy, but rather seek to introduce such for the sake of grandeur and variety. If not indigenous, many such are at least familiar, and from long and extensive use rank among the established trees of the country. Among the exotics we would include the most ornamental species of the middle and north of Europe, many of those indigenous to the east and west coasts of North America, and some of the Himalayan, Californian, and Japanese species. It is, however, well known to horticulturists who remember the effect of the winter of 1860–61 that some of these will not withstand the rigours of a possible English winter. They may live through a mild winter such as that of 1877–8, but it would be a great mistake to introduce delicate and tender trees, which merely live without flourishing in our climate. To plant such—however beautiful they may be, or whatever interest may attach to them economically or scientifically—would be a waste of money, time, and labour; would, in fact, be courting failure and disappointment. As I have had a nursery at Loughton in Epping Forest for the last sixteen years I speak advisedly on the point. Certain trees and shrubs which I remember being killed in the winter of 1887–88, and again in 1860–61 in the valley of the Lea, were subsequently planted in these nurseries, and flourished till the last winter, when many were injured and some destroyed. An additional reason why trees of questionable hardiness should not be used is that there are plenty of hardy trees suitable for all the purposes of Epping Forest.

But there is another very important point to work out in the process of planting—variety. The colours of the trees now existing in the Forest are, for the most part, of a uniform green; and, however correct it may be to use such as the groundwork of our operations, it is desirable to secure every shade of colour, from grass green and silvery grey to inky black, as well as the varied tints of the unfolding leaves in spring, and the glow of the autumnal foliage in autumn. By this means the Forest would present an entirely different aspect at each season of the year—spring, summer, autumn, and winter; and no mean end would be accomplished if, in planting, the pleasing natural characteristics of each section could be brought out in all the fulness of their individuality and beauty. It is desirable that we should have here more variety in the young leaves in spring; greater exuberance of foliage, securing coolness and shade in summer; a richer glow of red, yellow, and russet brown in autumn; and the shelter and furnished appearance of evergreens in winter. For instance, masses of the Corstorphine Plane (*Acer Pseudo-platanus luteum*), the young leaves of which are of a bright golden yellow, might be planted for effect in spring; the Douglas Fir (*Abies Douglasii*) for breadth of light and shade in summer, and shelter in winter; the Scarlet Oak (*Quercus coccinea*) and Norway Maple (*Acer platanoides*)—the leaves of the former changing to scarlet, and those of the latter to yellow—to vary and enrich the scenery with their bright and warm autumnal dress. Beech groves and Oak groves might be formed from trees already existing, and there might be added Chestnut groves, Birch groves, Lime groves, Cypress groves, Cedar groves, Wellingtonia groves, and others almost within limit. These trees should be planted in masses, and in such manner that they also vary and improve the character of the forest scenery.

7. Trees.—I shall now offer a brief list of trees and shrubs which stand foremost in my opinion as likely to contribute most to the improvement of the existing landscape:—

1. Deciduous Trees, remarkable for the Beauty of their Unfolding Leaves in Spring.

Purple Beech (*Fagus sylvatica*), foliage purple; Purple Birch (*Betula alba*), foliage purple; Purple Horse Chestnut (*Æsculus Hippocastanum*), foliage purple; Corstorphine Plane (*Acer Pseudo-platanus luteum*), leaves yellow; Colchicum Maple (*Acer colchicum rubrum*), leaves red; Larch (*Larix europæa*), leaves light fresh green; *Pyrus Aria* (in varieties), leaves white.

2. Deciduous Trees, for Summer Leaves.

Birch (*Betula alba*), Plane (*Platanus occidentalis*), Poplar, of sorts (*Populus*), Lime (*Tilia europæa*), Horse Chestnut (*Æsculus Hippocastanum*), Spanish Chestnut (*Castanea vesca*), *Gleditsia triacanthos*, Mountain Ash (*Pyrus aucuparia*), Turkey Oak (*Quercus Cerria*), Magnolia of sorts, Deciduous Cypress (*Taxodium distichum*), Acacia (*Robinia Pseudo-acacia*), *Ailanthus glandulosus*, Sycamore (*Acer Pseudo-platanus*).

3. Deciduous Trees, remarkable for the Beauty of the Decaying Leaves in Autumn.

Scarlet Oak (*Quercus coccinea*), Liquidambar (*L. styraciflua*) leaves red, purple, and yellow; Norway Maple (*Acer platanoides*), leaves yellow; Scarlet Maple (*Acer rubrum*), leaves red; Tulip Tree (*Liriodendron tulipifera*), leaves yellow; Parrotia persica, finely coloured leaves; Stag's-horn Sumach (*Rhus typhina*), leaves red and yellow; Black Walnut (*Juglans nigra*), leaves yellow; *Kolreuteria paniculata*, leaves yellow; Ginkgo Tree (*Salisburia adiantifolia*) leaves yellow.

4. Evergreen Trees, for Shelter and Effect in Winter:—

Arancaria imbricata, Deodar (*Abies Deodara*) on hills or slopes,

Mount Atlas Cedar (*Cedrus atlantica*), Cedar of Lebanon (*Cedrus Libani*), Douglas Fir (*Abies Douglasii*), Spruce Fir (*Abies excelsa*), Austrian Pine (*Pinus austriaca*), Corsican Pine (*Pinus Laricio*), Pyrenean Pine (*Pinus pyrenaica*), Scotch Pine (*Pinus sylvestris*), Lawson's Cypress (*Cupressus Lawsoniana*), Lambert Cypress (*Cupressus Lambertiana*), Wellingtonia gigantea, Arbutus (*Arbutus Unedo*), Evergreen Oak (*Quercus Ilex*), Holly (*Ilex Aquifolium*), Black Spruce (*Abies nigra*), Pines (various), Hemlock Spruce (*Abies canadensis*), Pinus insignis (less hardy than others, but desirable for its colour; should be planted on hills and slopes), Pinus excelsa, Sequoia sempervirens, Cryptomeria japonica, Thuja borealis, Thuja Lobbi, Chinese Juniper (*Juniperus sinensis*), Red Cedar (*Juniperus virginiana*).

5. Flowering Trees.

Crab (*Pyrus Malus*) and its varieties; Cherry (*Cerasus*) of various sorts; Hawthorn (*Crataegus Oxycantha*) and its varieties; Double Sloe (*Prunus spinosa*), flowers purple; Almond (*Amygdalus communis*); Plum (*Prunus*) of various kinds.

It may be said that this is a rather limited list of trees, and I admit that it is so. But then it must be remembered that we are looking at the question from the forest scenery rather than from the scientific or gardenesque point of view, and for the realisation of our object we prefer to plant a few really effective trees on a large scale to the introduction of a multiplicity of non-effective species and varieties.

8. *Shrubs and Plants*.—Of shrubs of moderate and lowly growth the Rhododendron (*R. ponticum*) should specially abound. There are many spots in which it would thrive as well as in its native habitats, and the richness of its foliage in winter, and the gorgeousness of its blossoms in May and June, commend it to every observer. The Azalea pontica is also a fine-flowering shrub; *Garrya elliptica*, too, which is evergreen, producing catkins like the Hazel in winter. The *Leycesteria formosa* and the *Mahonia aquifolium* are all desirable shrubs. The Hazel (*Corylus Avellana*) is also desirable on account of the catkins and nuts it produces; and the scarlet and golden Willow (*Salix*), and the red-barked Dogwood (*Cornus*), for the colours of their bark in winter. The Furze (*Ulex europæus*) should be sown largely in dry stony places; the splendour of its golden blossoms in early summer is well known, and its rich strong scent is generally agreeable. The Broom (*Spartium scoparium*) is also a beautiful plant. However desirable it may be to preserve the species of British plants growing at present in the Forest, it is probable that some will be unintentionally diminished in number or perhaps destroyed by the work of draining and other improvements. It might, however, be possible to have stations at which the rarer kinds—as the Sundews (*Droseras*)—could be preserved, and the natural flora might be largely increased by sowing seeds of others broadcast over large tracts of prepared ground in spring. Primroses and Bluebells exist already in great abundance, and there are perhaps no prettier wild flowers than these in spring; but there are many others of rare interest which are absent, or are met with only occasionally. Such might be introduced or increased in number at a small cost, and under this head odoriferous flowers should be largely cultivated. Thus the unavoidable diminution on the one hand might be compensated for by an increase on the other, and no wild flowers, however insignificant in appearance, should be heedlessly destroyed. I would here put in a special word in favour of the Bramble (*Rubus fruticosus*). This should be encouraged on all sides, for this plant is beautiful when in flower and attractive when in fruit. The Pampas Grass (*Gynerium argenteum*) should prove a suitable and effective plant; and wild Roses, wild Honeysuckles, wild Clematis, the Hop, Ivy, Virginian Creeper, St. John's Wort, Lily of the Valley, Periwinkles, and Violets should specially abound. Heath and Fern are already plentiful, and both are valuable—the former for its beautiful flowers, the latter for its leaves and autumn tints.

After advertising to the subjects of animals, birds, recreation grounds, and lodges, Mr. Paul observed in conclusion that never before in the history of England has such an opportunity been afforded of making a grand national recreation ground. Ostensibly for the use of the inhabitants of London it may become in the future, and that without any vast expenditure of money, "a thing of beauty" which shall be a joy to every Englishman, and one of the bright spots of our island which shall be sought out by visitors from the most distant shores.

FLOWERS IN THE OPEN AIR AT DUBLIN.—Friends in London write me of the bitter frosts and blighting fogs, of nothing growing even indoors, and of Phloxes and other Orchid buds dropping off by the dozen, while here the climate is bright and lovely. On Saturday, the last day in January, the thermometer stood at 53° at noon in the sun, and the rise of temperature in the houses was sufficient to make us rake out the fires. Among open-air flowers we have the following in beauty just now—*Helleborus niger* in variety, *H. atro-rubens*, *H. orientalis*, *H. olympicus major*, one of the most noble in flower and leafage of the whole group. Hepaticas are peeping,

and Snowdrops are opening here and there on the grass. The Golden Jasmine from Japan (*J. nudicaule*) is lovely on sunny walls trained along with *Cotoneaster Simmondsii* and golden and green-leaved Ivy. Wallflowers have been struggling with the frost all the winter and are now opening well.—DUBLINER.

HEATING WITH PIPES BELOW THE BOILER.

YOUR correspondent, J. Robinson, can heat with his pipes below the boiler as well as above if he fixes the water box as high as convenient above the boiler, taking the flows from the same to any part of the house he may want them, then bring the return back to the boiler, but before connecting them with it dip them down some distance below the lowest pipe in the house. Let the pipe from this bend into the boiler be as upright as possible. Whilst on this subject I must say I have been astonished at the want of correct knowledge in heating by persons who are constantly engaged in the work. This is especially noticeable where a boiler has to heat houses on both sides of it, one set with bottom heat and the other without it. If the return from the highest pipes were dipped below the boiler the other would work all right. If there be anything at all in the high-pressure system it is no matter whether the water rises 3 feet into the boiler and 3 feet above, provided the rise into the boiler is as upright as possible. Why have sunk stokeholes that fill with water, and drains half a mile long to carry it off, when the pipes might be set in cement to keep the cold soil and water from them and the boiler set at any height?—B. LADHAMS, Florist, Shirley, Southampton.

COMPARISONS OF ROSES—CAPITAINE CHRISTY.

A CORRESPONDENT in page 77 of the Journal, January 29th, remarks that he has "no faith in Capitaine Christy keeping so high," and he proceeds to enumerate upwards of thirty Roses, dark and light, all, in his opinion, "better, or as good as Capitaine Christy." It appears to me that to estimate justly the merits of a pale Rose it were better to compare it with some of its kind nearer it in complexion and substance than a number of Roses of all tints and colours. As far as my experience of Capitaine Christy goes it is in its way almost as unique a Rose as *La France*—hardy, free-blooming, and of perfect habit of growth. It has a soft and beautiful appearance, owing to the two tints of palish pearly pink or blush which distinguish its very abundant and somewhat crumpled petals—petals delicate and semi-transparent, almost as a Tea Rose. Then the foliage—of a peculiar brownish hue, passing to rich darkest green at maturity—is quite unlike that of most other Hybrid Perpetual Roses. Though not so graceful and fragrant as *La France*, and not perhaps possessing the very perfect (almost formal) outlines of *Madame Hippolyte Jamain* or of *Comtesse de Serenye*, I should be sorry to think that Capitaine Christy did not continue well to the front as one of the very best and one of the most distinct of light-coloured Roses.

As to the relative merits of dwarf and standard Roses, in point of healthiness dwarfs often have the advantage. I have not found them so liable to the grub as the standards are, thus they are not nearly so troublesome to look after in May and June even. On the other hand, standards are attractive at a distance where dwarfs cannot well be seen. But I have, perhaps, said too much. Where both are grown one can soon decide generally which suits best—dwarfs on *Manetti*, or standards on *Briar stocks*. I incline to the *Manetti*, and year by year plant more dwarfs, but then my soil is very light.—A. M. B.

SMALL BIRDS.

A FEW years ago the press, and consequently the public, were eager to have all small birds destroyed. Now, however, every small bird must be preserved, and farmers and gardeners are held up to be the most cruel and inconsiderate people in the world, who do not know one bird from another, care nothing for the beauties of Nature, and do not know that every small bird does more good than all the farmers and gardeners in the country. If the writers of many of the letters to the press would draw some distinction between the destruction of thousands of larks for sale in the game shops of large towns and the judicious slaughter of a few dozen bullfinches by the gardeners in various parts of the country, the question would assume a very different aspect. As farmers and gardeners are the people who are most blamed for the indiscriminate

destruction of small birds it is only fair that they should have a hearing and be allowed to show that they only destroy such birds as are inimical to their interests. Comparatively speaking, there are now none of Nature's counterbalancing agents to keep the equilibrium; hawks, owls, magpies, weasels, stoats, and other birds and beasts of prey have been destroyed in order to preserve game, as hand-fed pheasants and partridges are termed. Under such circumstances small birds are sure to increase considerably.

The last severe winter, in conjunction with the present rigorous weather, has undoubtedly thinned the ranks of many of our favourite songsters, but that is no reason why people who have not had to contend against the ravages of these marauders should raise a hue and cry against every gardener who shoots a bullfinch or a sparrow. By all means let us have as many "feathered songsters" as the sentimental "bird preservers" call them, as we can, but let them be harmless. We all admire the lark, and no gardener, I think, has a grudge against him, yet he is remorselessly destroyed for eating, or captured to pass the remainder of a miserable existence in a cage that is scarcely large enough for him to turn round in. There are many birds besides the lark which do no harm but an immense deal of good to farmers and gardeners—birds that are wholly insectivorous; there are also some which cannot with impunity be tolerated near a garden, chief among these is the bullfinch. The sparrow, more from numbers than anything else, is equally dangerous; these if allowed scope would soon render every garden in the kingdom barren as regards fruit. Among granivorous birds nothing seems capable of doing so much mischief as the chaffinch, or as he is called in the north "sheely." He is certain to find out a newly-sown seed bed, and as soon as he does that no watching will keep him off it, it must be netted or covered up. Ordinary scarecrows have no terrors for him. I have heard of an old gardener who stuffed a very large cat and placed him on his seed beds in the spring, only to find the "sheelies" hopping about on Tom's back the next day. I think gardeners and farmers may safely be left to look after their own affairs in this matter, and they will not destroy anything that is not positively an insufferable nuisance to them. It is the indiscriminate wholesale slaughtering and capturing practised by dealers that has brought about the alarming scarcity of small birds, and the sooner it is stopped the more credit to our humanity and wisdom.—PETER FERGUSON, *Mere Knowles Cemetery, Monk Wearmouth.*

NOTES AND GLEANINGS.

A CORRESPONDENT advises those who have CAMELIAS which are unhealthy to cut them well back and start them into growth in a stove temperature, watering carefully. After they are started into growth shake the roots clear of soil and repot the plants into small pots, employing a light open soil. He treated a small collection in this way five years ago with highly satisfactory results.

It is rare to find ORCHIDS in good condition in private gardens in the immediate vicinity of such a smoky city as London, yet we recently noticed one of these exceptional cases in the garden attached to the residence of Sydney Lawrence, Esq., Cavendish Road, Clapham Common. There under the charge of a skilful gardener, Mr. Whillans, are *Odontoglossums*, *Coelogynes*, *Angræcums*, *Masdevallias*, and *Phalenopsis* growing luxuriantly and flowering freely. One specimen of *Angræcum sesquipedale* was especially noticeable for its size and vigour, in fact a finer plant is seldom seen. The pretty *Odontoglossum pulchellum* was bearing several spikes of pure white flowers; and an excellent variety of *O. Alexandras* was also in flower. There has been a fine display of *Coelogyne cristata* until within the last few days, when the dense fogs that have prevailed, loaded with the sulphurous smoke of London, have had a most disastrous effect upon the flowers, causing them to become completely shrivelled. From the same cause two handsome *Phalenopsis* have lost all their flowers, and even a *Clerodendron Balfourianum* trained up the roof has been so seriously affected that the flowers fall upon the slightest touch.

In the garden above mentioned there are many other well-grown plants besides Orchids; but perhaps the most remarkable is a specimen of *RHODODENDRON DALHOUSII*, which last season produced about five hundred flowers. This is one of the beautiful Himalayan species, and was introduced to this country as long ago as 1850, but is rarely seen in cultivation.

A USEFUL plant for the cool stove or greenhouse during

winter is the old *VELTHEIMIA VIRIDIFOLIA*, a Liliaceous plant from the Cape of Good Hope. If grown in good light loam and sand, and freely supplied with water during growth, the scapes of pinkish-white flowers are produced through several months of the dull season.

— ANOTHER bright and attractive winter-flowering plant is the peculiar *STRELITZIA REGINÆ*. The spathe of flowers are freely produced, last a considerable time, and the union in the flowers of brilliant orange and dark blue renders them very distinct and effective.

— WE have received from Messrs. CASSELL & Co. part 35 of Mr. Edward Hulme's "Familiar Wild Flowers," which contains coloured plates of *Geranium lucidum*, *Lychnis Flos-cuculi*, and *Senecio aquaticus*, together with descriptive and historical letterpress; part 12 of Mr. Shirley Hibberd's "Familiar Garden Flowers," which includes coloured plates of *Antirrhinum majus* and *Iris germanica*, accompanied by the usual entertaining descriptions; and part 6 of "European Ferns," which contains a continuation of the introduction, descriptions of species of *Cystopteris* and *Pteris*, and a coloured plate of *Adiantum*, in which, however, the shades of green are too light.

— WE recently noticed the following ORCHIDS flowering in the houses devoted to them at Kew:—The well-known and generally admired *Odontoglossum cirrhosum*, the free-flowering *O. bictoniense*, with that beautiful and distinct species *O. triumphans*. *Zygopetalum Mackayi*, *Cypripedium Harrisonianum*, and *C. Boxalli* were also in flower, the latter resembling *O. villosum*. Considering the adverse season the general appearance of the plants in this department is very good.

— A VERY handsome plant for conservatory decoration is *RHODODENDRON COUNTESS OF HADDINGTON*, a good specimen of which is now flowering in the greenhouse at Kew. The flowers are long, tubular, white faintly suffused with pink, and very fragrant. They are borne in clusters of four or five, and have a slight drooping tendency, which considerably improves their appearance.

— IN reply to "AN AMATEUR" on page 28, a Gloucestershire correspondent confidently recommends the following SOLUTION FOR STRINGING WALL TREES after they are pruned and all old shreds replaced by new ones, as this is the seat of nearly, if not quite all, our summer pests. Dissolve half a pound of soft soap in a pint of boiling soft water; when cold add one quart of tobacco water, and well mix with eight quarts of soft water. Syringe the trees, taking care not to allow the smallest portion to be left untouched.

— THE Court of Common Council, at their meeting on the 22nd ult., ratified the appointment of Mr. ALEXANDER MCKENZIE as Superintendent of Epping Forest at a salary of £500 per year.

— MR. ALLIS, writing to us from the neighbourhood of Biggleswade, states that during the past week the FROST has been continuous. On the 27th the mercury registered 16° below freezing; 28th, 15°; 29th, 14°; 30th, 12°; 31st, 6°. The frost has penetrated several inches into the ground. Most outdoor work has been very much retarded and some entirely stopped. Ice on the lakes is upwards of 4 inches thick. *Laurustinus*, *Sweet Bay*, and *Magnolias* severely cut, and *Euconymus* in many cases killed.

— MESSRS. J. CARTER & Co., 237 & 238, High Holborn, offer the following prizes to be competed for during the meetings of the Royal Horticultural Society this season:—On July 13th, for the best three dishes of Peas as follows—fifty pods Carters' Stratagem, fifty pods Carters' Telephone, fifty pods Telegraph, 1st prize, £5; 2nd, £3; 3rd, £2; 4th, £1; 5th, 10s. 6d.; on December 14th, for the best collection of twelve dishes of vegetables, without restriction to varieties, 1st prize, £5; 2nd, £3; 3rd, £1 10s.; 4th, £1; 5th, 10s.; 6th, 7s. 6d.; and should the first prize be awarded to vegetables grown from Messrs. Carters' seed they reserve the right to increase the amount to £8 8s.

— AS evidence of the great demand for DECORATIVE PLANTS IN EDINBURGH, we learn that during one month in 1879 Mr. William Thomson of the Tweed Vineyards, Gala-shiels, sold over the counter of his shop in the city three thousand plants, besides cut flowers. Mr. Thomson appears to pay special attention to plant and flower culture, as Grape-growing is not so profitable as formerly on account of so many Grapes being sent to the markets from private gardens. The annual supply of Grapes from the Tweed Vineyards in the

future is estimated at 15,000 lbs. An extent equal to five miles in length of 4-inch piping is now employed in heating the various structures devoted to the production of Grapes and plants at Clovenfords.

— In the reports just published of tenant farmers' delegates that have recently visited the Dominion on the invitation of the Minister of Agriculture of the Canadian Government, incidental allusion is made to **FRUIT CULTURE IN CANADA**. The neighbourhoods of Grimsby and St. Catherine's, near the Niagara Falls, are famous for Apples, some farmers growing two thousand to four thousand barrels, worth 6s. per barrel. Peaches, Grapes, and other fruits are also largely grown, the situation being sheltered and the soil deep sandy loam. In a Mr. Wolverton's orchard seventy Apple trees are planted to the acre, and 140 to 150 Peach trees on the same extent of land. The latter were ten years old and produced last year fifteen hundred bushels of fruit, or a value per acre of £120. A Mr. Kitchen's orchard contains three thousand Apple trees besides other fruits, and the average yearly sale of fruit and wines amounts to between £1600 and £1700. Wild Strawberries, Raspberries, Currants, and Cranberries grow plentifully in the province of Ontario. In the State of Manitoba Potatoes without any care in cultivation, in some cases not even moulded up, yield between three hundred and four hundred bushels per acre, and sell from 1s. to 2s. per bushel. Onions are also very profitable, yielding often three hundred bushels per acre, and selling from 3s. to 4s. per bushel according to the time of year when they are sold.

— On the 28th ult. at Glasgow a **PRESENTATION** was made by his many friends and admirers to MR. TURNBULL, the highly esteemed and veteran gardener at Bothwell Castle. The chief object of the promoters of the presentation was to give expression to a feeling of deep respect that was known to exist so widely towards a genuine gardener and worthy man—one who has laboured so long and successfully in the cause of horticulture. The presentation was in the form of 170 sovereigns, a pair of gold eyeglasses, and an address on vellum. A description of the gardens at Bothwell Castle by Mr. Pettigrew, on page 482, the issue of the 18th December last, closes with these words, "We found Mr. Turnbull—after fifty-one years of active faithful service, aged 76—full of gardening instincts and youthful-like enthusiasm; and though by a great misfortune—viz., his connection with the City of Glasgow Bank, he has lost every farthing of his savings for half a century, everything but his clothes having been taken from him and sold, we were charmed with his pleasant smiles and conversation, his buoyant and hopeful spirit. In this one situation he has served several honourable and noble employers with credit and satisfaction, and it may be said that Mr. Turnbull himself, if not in blood, yet in heart and life, is a true nobleman." Such a man is well entitled to the token of regard that has been accorded him, and we trust he will long enjoy the esteem of those who have honoured themselves by honouring him.

FLOWER SHOWS.

A VERY interesting paper on the management of the above—a subject which has been recently ably dealt with in your columns—was read by Mr. J. Barry of the Royal Horticultural Society at a meeting of the Ealing and District Gardeners' Society on the 28th inst. The systems in practice at the principal London floral exhibitions and at some of those held in the provinces were compared in detail, much to the disparagement of the latter; the merits claimed, and rightly so, for the London system being simplicity, promptitude, and correctness. The secret system of judging was, as it deserves to be, strongly denounced.

Secretaries of local societies would find a great want supplied were some good, cheap, and explanatory little work within their reach, which would give full and reliable information on the various points of exhibiting, in which through no fault of their own they appear to be deficient. They will be pleased, therefore, to hear that it was stated in the course of reading the above paper that such a work is in course of preparation.

Advertising as a good sign to the hearty support given to flower shows by the working classes, it was mentioned that on Whit-Monday last the sum of £680 was taken in shilling admissions (representing 13,600 people) by the Manchester Horticultural and Botanical Society; and that the Whit-Monday Popular Shows of the Royal Horticultural Society, even in unfavourable weather, as was the case last year, are thronged by the

poorer classes of London. A suggestion was made that for the additional benefit of the latter the Councils of the Royal Horticultural and Royal Botanic Societies should throw open their grand summer shows in the evening at a cheap rate of admission, in order to secure the support of the masses. If this were acted upon, and made well known, doubtless a financial success would be the result, in addition to its having a great moral influence upon those so privileged.—J. R. A.

CLIP LABEL FOR FLOWER POTS.

WE have received from Mr. Ecroyde Claxton of Liverpool the label represented in the annexed engraving. As will be seen, the object of the inventor has been to produce a label

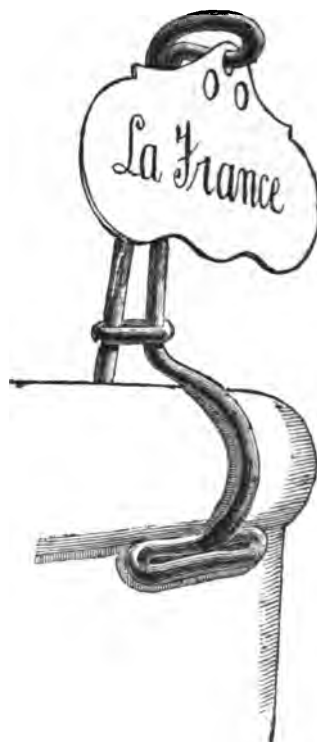


FIG. 18.—Clip Label.

that can be attached to the rim of a flower pot. He has succeeded well, for what we may term the Claxton clip label can be placed on the pot and removed from it with the greatest ease, while when in position it is so firmly fixed that it cannot be lost or displaced by any usage to which a plant is subjected by removal or transit. The wire supporting the label acts as a spring, which is tightened or relaxed by the clip precisely in the same manner as the ferrule acts that encircles the spring of the ordinary rat or rabbit trap. Any names desired can be written on the labels, the name *La France* as represented in the figure being simply given as an example. The end of the wire in the inner side of the pot is a little longer than that shown outside, and terminates similarly with a corresponding cross piece, and these with the clip pressed firmly down render the label firm and secure.

THE FIRST IRISH YEW.

As the progenitor of all the Irish Yews now established in this and other countries, the annexed engraving from a photograph of the original specimen growing in its home at Florence Court, County Fermanagh, Ireland, the seat of the Earl of Enniskillen, will be welcome to our readers. On reading the remarks on Irish Yews in previous issues of the *Journal of Horticulture*, his lordship kindly placed the photograph at our disposal, and has also obligingly sent us the following authentic account of his highly cherished and historical specimen:—

THE IRISH OR "FLORENCE COURT" YEW.

I beg to state that the two original plants were found more

than a century ago on a rock in the mountain above Florence Court, called Carricknamaddow, or "The Rock of the Dog," by a Mr. Willis, tenant of the then Earl of Enniskillen. He planted one specimen in his garden, and the other he brought down to Florence Court. The first died about fifteen years ago. The second one—the parent plant of all the Irish Yews—is still alive at Florence Court. Its height is only about 18 feet, and its circumference 17 feet, having been greatly damaged by the number

of cuttings taken from it for propagation, which have been forwarded to all parts of Europe and America.

The late Earl of Enniskillen gave the first cuttings of this Yew to Messrs. Lee & Kennedy of Hammersmith. There are now at Florence Court several fine specimens, some of them being from 24 to 26 feet in height.

I may add that the upright Yew can only be propagated by cuttings, as if the berry is sown it produces a hybrid, with the

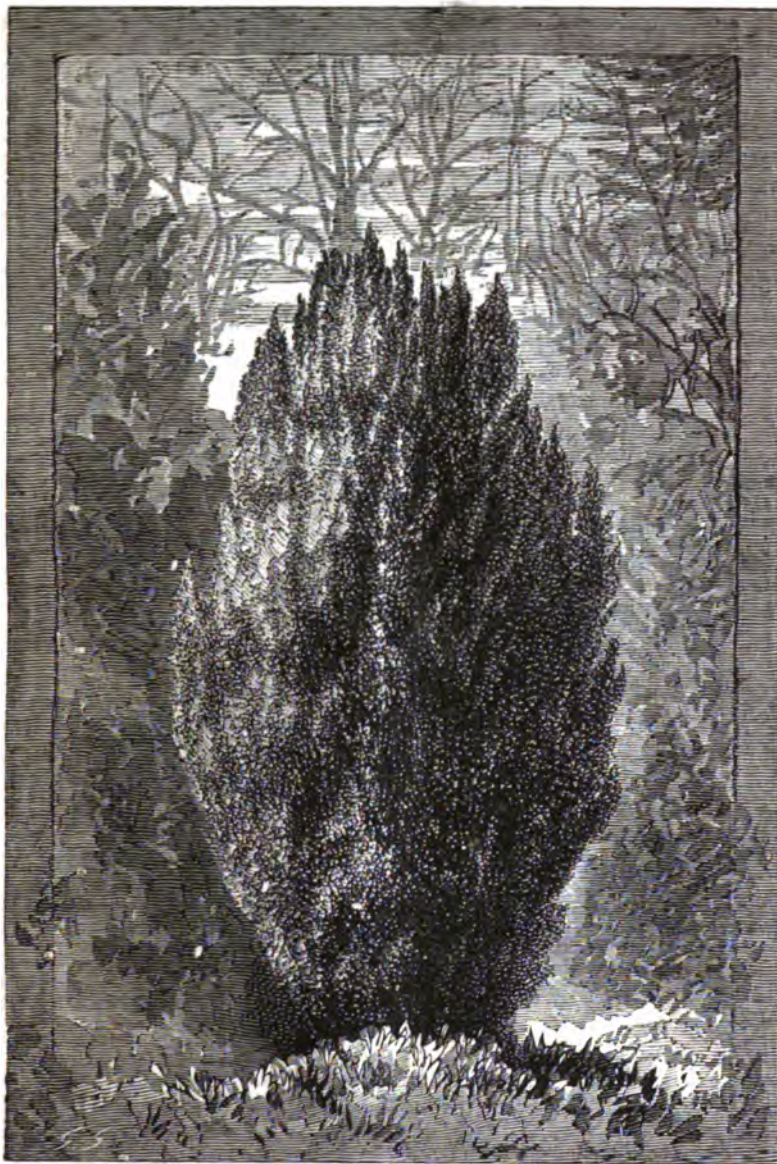


Fig. 16.—THE ORIGINAL FLORENCE COURT YEW.

growth of the common Yew, and the foliage of the upright or "Florence Court" Yew.—ENNISKILLEN.

Mr. Hubbard, the gardener at Florence Court, states that the finest specimens he has seen are at Caledon, County Tyrone, which he estimated seven years ago as exceeding 25 feet in height.

THICK VERSUS THIN SEED-SOWING.

SOME seedsmen in their seed catalogues caution their customers, that owing to the unfavourable seed harvest of 1879 most vegetable seeds should be sown somewhat thickly this season. On page 60 of the Journal I, however, noticed counter advice given by "A KITCHEN GARDENER"—viz., sow thinly.

The conflicting advice referred to will, I fear, be perplexing to some readers. I must admit that there is much reason in "KITCHEN GARDENER'S" remarks. As a rule seeds are sown too thickly; but as the seed harvest of 1879 was an exceptionally bad one, I think it will be the better plan to err on the safe side by sowing a little thicker than usual. I would, however, advise all who can to test the quality of the seeds by sowing them in small flower pots. The plan is very simple. Count out a certain number of seeds and mark the quantity on the label, also the date of sowing. Place the pots in a house or pit having a genial temperature, and keep the soil moist. A hotbed such as is used for growing Cucumbers and Melons is not the best place for testing, as many seeds will germinate there that would not grow if placed in wet cold soil. The number of

seeds that germinate in the pots will give the per-centage of reliable seeds, then sow accordingly.

I feel convinced that sowing seeds too soon is also a bad practice; the nature of the soil, season, and situation should be taken into consideration. The best *Paranips* I ever remember to have seen were from seed sown the latter end of March or beginning of April in 1878, and this was by no means a good season, and I may add that the best crop of Onions I ever grew was from seed sown on the 6th of April some years ago. I wish it to be distinctly understood that I do not mean that seeds should not be sown on earlier dates than I have mentioned. Much will depend on the season and condition of the soil at the time of sowing. Most soils are wet and cold at the present time, therefore a little extra care and attention will be necessary to ensure success.—G. R. ALLIS.

DISEASE-RESISTING POTATOES.

I BOUGHT several varieties of Potatoes last year (new and old) in order to try their comparative merits, but owing to the exceptional state of the weather during nearly the whole of the season I was at last compelled to abandon my original intention. After the entire crop had been submerged two or three times it was not to be wondered at that most of the varieties failed, and such as *Snowflake*, *Early Oxford*, and one or two others did not yield a single sound tuber, but *Settons' Magnum Bonum* was lifted without the slightest trace of any disease, and was a fair crop notwithstanding the weather and local disadvantages. *Johnstone's Downshire* too proved a very fine variety, for I lifted nearly 20 lbs. of Potatoes from 1 lb. which I planted, entirely free from any traces of the disease. I have not seen this variety advertised as a "disease-resister" but it deserves that character. I obtained the seed from Messrs. Daniels of Norwich.—G. H. FROST, *Stamford Hill*.

"SAXORING" (page 85), is correct. *Schoolmaster* has no right to be called a disease-resisting Potato. Here and elsewhere I have seen it proved the very opposite. I could name a dozen or more better disease-resisting varieties than it; but according to my experience and observation there are only about three varieties of Potatoes that can lay just claim to this valuable title, and these are *Magnum Bonum*, *Woodstock Kidney*, and the *Scotch Champion*.—J. MEIER.

NOTES ON VILLA AND SUBURBAN GARDENING.

PLANTING FRUIT TREES.—On page 48 under the heading of "Work for the Week," good directions were given for the preparation of positions intended for fruit trees. It is very inadvisable to plant during frosty weather, but rather bide in the trees on arrival till a favourable opportunity occurs for planting them. Neither should the holes be made long before planting in case of wet weather setting in, as the newly moved earth quickly becomes sodden and unworkable. Examine the roots of the trees to be planted, cutting back all that are damaged, and also the ends to facilitate their healing. Plant rather above the ground level to allow for sinking, and do the work carefully, not, as is often done, merely placing the tree in position, throwing in soil and working the stem up and down to run it among the roots, as this will give the latter a downward tendency. A better plan is to fill in the hole to within rather less than the depth of the roots of the tree from the ground level, making an even surface with some of the best of the soil, and on this spreading the lowest tier of roots, cover them with more of the best soil, and thus working upwards, every root being laid out exactly as starting from the stem. The surface to be neatly rounded off, and mulched if possible with short manure. Any soil not required may be wheeled away and advantageously mixed with the heaps of manure. Standard trees will require staking, which is best done at once, using two or even three stakes in preference to one, which is seldom capable of steadying the tree. The stakes should be driven in a short distance from the tree, the stem of which should be padded to prevent its being chafed by the cord employed in tying.

ROOT-PRUNING.—This is advisable in the case of a fruit tree being much too luxuriant, and thereby unfruitful, the object being to diminish the supply of sap, which check causes the formation of fruit buds instead of the usual strong growth. The operation is simple, and consists merely of opening a trench at a good distance from the stem, say about the extent of the tree's growth, and shortening back with a knife all strong rambling roots. When digging out the trench the operator should work side-faced to the tree (this is very important in tree-moving) in order to save as many as possible of the better roots and rootlets. The soil should be thrown out to a good depth and well below the roots to facilitate the removing the soil from among them, which

must be continued till the tree is nearly undermined, as some of the grossest roots are often to be found there. The strong roots should all be shortened back and the soil returned, arranging the roots as advised for the newly planted trees.

TREE-MOVING.—The majority of shrubberies adjoining villas are invariably planted thickly for immediate effect, which necessitates thinning-out after a time. If judiciously planted in the first instance thinning-out is a simple matter, as then only those of little value will have to be taken out, but where planted promiscuously and with little or no regard for the future it is difficult to decide which to leave. Thinning-out is very necessary in a mixed shrubbery, as otherwise much of the beauty of many specimens of *Hollies*, *Conifers*, *Box*, *Sweet Bays*, and even *Portugal Laurels* is soon irreparably lost. To prevent this, *Laurels*, *Aucubas*, *Berberises*, and similar common shrubs should, if not required elsewhere, be cut out and destroyed. It may be found advisable to re-arrange or move to a fresh spot some of the choicer specimens, and to meet this contingency we will offer a few brief remarks on the subject. Moving large specimens is laborious and expensive, and requires skilful management, but small trees and shrubs are easily, cheaply, and safely moved—no expense being necessary beyond the cost of the actual labour. The mode of procedure at the commencement is much the same as that recommended for root-pruning, one of the principal objects being to preserve as many good roots as possible. Much depends upon the nature of the roots of the tree or shrub to be lifted, some running straight away from the stem and forming but few rootlets, as with the *Strawberry Tree* (*Arbutus Unedo*), *Cedrus Deodara*, and *Cupressus macrocarpa*; others being closely and thickly rooted, such as *Aucubas*, *Arbor Vite*, *Box*, and even *Cupressus Lawsoniana*. In the former instance they move badly and require previous preparation, but the latter move readily enough, no difficulty being experienced in preserving plenty of roots with a sufficiency of earth to support the tree or shrub till well established in its fresh quarters. Fruit trees of all descriptions, the *Cherry* perhaps being excepted, move well, and oftentimes are improved by the operation. Always open a wide and deep trench in the first instance in order to be able both to remove the soil from among the most distant roots, and to undermine the ball of earth intended to be moved. A large ball should not be desired, as it is very apt to break away in large pieces, carrying many good roots with it. The ball should be undermined till left standing on only sufficient earth to support it, and should be made flat underneath with a fork. A strong board (we use a hand-barrow generally, similar to that used by masons for carrying stones) should then be placed under, and the ball carefully slipped on to it without much lifting or unnecessary dragging. The tree or shrub can be lifted out, taken to its destination, slipped off the board exactly where wanted, and the roots laid out and covered as before advised. Unless either the ball or the fresh soil be dry no water need be given at the time of planting. Many trees are annually lost through being dragged and pruned out of their quarters. If a ball cannot be obtained save as many roots as possible.

WORK FOR THE WEEK.

KITCHEN GARDEN.

EARLY crops of Peas require protection, or they are often seriously damaged by the depredations of sparrows. A few lines of fine barbed twine stretched over the rows, occasionally dusting the plants with dry wood ashes, will generally afford protection from birds and slugs. If mice are troublesome the use of the figure-of-4 trap will soon effect a riddance. When the state of soil admits a successional sowing of early and second early Peas should be made. First and Best, *William I.*, *Alpha*, and *Essex Rival* are good varieties for this sowing. To preserve the seed from the attacks of mice, &c., it should be moistened and coated with red lead before sowing. A row of *Round Spinach* seed may be sown between the rows of Peas. *Winter Spinach* is often too much restricted in space both between the rows and plants, which render it liable to decay in damp weather. A sowing of *Broad Beans* should be made in proportion to the demand. *Intermediate* and late-planted *Celery* will soon be showing indications of running, and to check this lift the plants, retaining a small ball to each and lay them in at the back of a north wall, spent tan being a good material for covering. The ground may then be prepared for Onions and other root crops. *Jerusalem Artichokes* may now be planted 18 inches asunder in rows 3 feet apart, placing the sets about 4 inches deep. Good, rich, well-manured light soil should be chosen and an open situation. Make fresh plantations of *Rhubarb*, which to be good and fine should be transplanted every third or fourth year, the ground being well trenched and heavily manured. That intended to be taken up in the second year for forcing may be planted 3 feet apart every way, but for pulling in the open 4 feet should be allowed, and for the larger varieties 5 or 6 feet. *Johnson's St. Martin's* is the best for early use and forcing; *Victoria* is good for general purposes; and *Stott's Monarch*, the largest of all, is excellent for tarts. When *Seakale* is taken up for forcing a plantation may now be made of the healthy roots or the small crowns, planting them 15 to 18 inches asunder in rows 2 feet

apart. Light soil deeply trenched and well manured is essential for producing large crowns. A first sowing of Turnip, Early Nantes Carrot, and Radish seed may be made on a warm border; that at the base of a south wall will answer for the two last, but an east border is preferable for Turnips. Where Carrots and Radishes are forced in frames the sowing outside may be deferred until the end of the month. A little seed of Cauliflowers, Leeks, Brussels Sprouts, and Sugarloaf Coss Lettuce may be sown in frames over gentle bottom heat, but plants so raised are often inferior to those from a sowing made about the middle of the month on a border at the base of a south wall. If there is likely to be a scarcity of Lettuces a sowing should be made of Early Paris Market on a bed of light soil over fermenting materials, covering with a frame, and sowing the seed in drills about 6 inches apart.

Forcing Department.—See that there is no break in the succession of Dwarf Kidney Beans, making fresh sowings at intervals according to the means and demand. Where pits are available that are heated with hot-water pipes Beans will succeed much better than those grown in pots. Canadian Wonder is more prolific than many, but requires space; Negro also being excellent. Potatoes that are growing vigorously must not be allowed to become drawn through deficient ventilation. Sets of these which have been recently started should be planted out when about 2 inches long. The supply of Mint must be maintained by introducing fresh roots, also of Seakale, Rhubarb, &c., not omitting Tarragon. Make a sowing of Celery seed for an early main crop; Wright's Giant White and Major Clarke's Solid Red are good varieties, also Sandringham White and Matchless Red. The early plants if now large enough may be pricked singly into small pots filled with rich soil and placed in a warm pit as close to the glass as possible. Sow seed of Capsicums, Tomatoes, and any herbs required early, such as Basil and Sweet Marjoram. Tomatoes if now strong enough should be potted off, and reported as fast as is consistent with their growth.

FRUIT HOUSES.

Figs.—The earliest forced trees in pots will now be in full growth, and the points of the shoots must be pinched out after they have made a growth of about 5 inches. Continue a temperature of 55° to 60° at night and 65° by day, advancing to 75° with sun heat. In dull weather give a little extra fire heat in the early part of the day, so as to allow of ventilation if only for an hour or two. The bottom heat should be kept steady at 75°; syringe frequently to keep red spider in check, and regularly supply water at the roots of the trees. When the earliest trees in houses have commenced growth the temperature should be raised slightly both at night and by day, and the surface of the border should be mulched with well decomposed manure in a lumpy state. Where there is more than one Fig house now is a good time to start a second, if the trees have been properly dressed and the strong shoots thinned out so as to leave the terminal shoots for the first crop. A temperature of 50° at night and 55° by day will be sufficient to commence with, rendering the borders thoroughly moist by soaking them with tepid water. The temperature from sun heat may advance to 65°.

Cherry House.—In the early stages of growth the Cherry is very impatient of heat, especially when the ventilation is insufficient. Commence ventilating at a temperature of 50°, allowing an increase of 15°, closing the house at 50°; 45° being sufficient by day artificially, and 40° at night. See that there is no deficiency of moisture in the borders, examining the trees in pots occasionally, and water liberally when necessary. Syringe the trees early on fine days, and damp the surface of the border whenever it becomes dry, covering it with partially decayed manure about 8 inches in depth. Fumigate directly aphides appear.

Pines.—Continue the treatment as advised in our last calendar under this head to those plants recently started into fruit. The plants if in good condition at the roots will produce strong suckers. When the suckers are large enough to handle, all except one to each plant, should have the growth checked by taking out the centre. To supplement the batch of autumn-potted plants select others which have been wintered in 7 or 8-inch pots, choosing the most vigorous plants. Those remaining should be reserved until the general spring potting, when they should be shaken out and treated similarly to suckers. Good fibrous loam with the turf well reduced, placed under cover to become dried, is a suitable compost. Drain the pots moderately yet efficiently; dust soot or wood ashes over them to exclude worms, and ram the soil firmly round the balls of the plants, keeping them well down in the pots to admit of copious supplies of water being given when necessary; 10-inch pots are suitable for Queens, and 11 or 12-inch for those of more robust growth. A temperature of 60° to 65° will be sufficient for these plants, also those potted last autumn, and about 85° bottom heat. Plants in beds about to be started into fruit must not have the heat at the base of the pots over 90° or 95°, or their roots will be injured. If sufficient fruit be started to meet the requirements, later successional plants that have not been subjected to a high temperature may be advanced slowly, they with autumn-potted suckers requiring careful watering, especially where the heat at the roots is supplied by fermenting materials.

Peaches and Nectarines.—The trees in the earliest-forced house will require attention in daily syringing when the weather is favourable to keep red spider in check; and when the fruit is about the size of small marbles thinning may be cautiously commenced. See that the inside border does not become dry, and that the outside border is well protected. Trees in the second forcing house are coming into flower, and in the driest and warmest part of the day the pollen should be gently distributed with a camel-hair brush or feather or by shaking the trellis. If the blossoms are too thickly placed it is sound practice to thin them on the under side of the trellis or shoots, particularly in the case of weakly trees. Where there is a number of houses another house for succession may now be started, and the trees will afford fruit in July. The buds in late succession houses are swelling fast, and require free ventilation in mild weather to keep them back. Inside borders must be attended to, and supplied with liquid manure in a tepid state.

Strawberries in Pots.—These, notwithstanding the adverse season, have thrown up the trusses strongly, especially Vicomtesse Hericart de Thury and La Grosse Sucrée, the earliest batch having set freely. Although a moderate temperature is advisable until the fruit is set and commencing to swell, a brisk and moderately moist heat is essential to its satisfactory swelling; hence 60° to 65° or 70° should be afforded artificially, with 10° to 15° advance from sun heat, and when the fruit commences ripening a drier atmosphere is essential to the colour and quality of the fruit. Plants advancing to the flowering stage must not be hurried; 50° to 55° is ample by artificial means, and 60° to 65° with sun heat and free ventilation. Another batch should be started without delay, introducing along with President, James Veitch, Sir Charles Napier, some of the early varieties, such as Sir Harry, La Grosse Sucrée, &c., so as to secure the succession unbroken.

FLOWER GARDEN.

Borders containing herbaceous plants, bulbs, &c., should be neatly forked over, reducing such plants as have become too large, or dividing such as are choice or desirable. Liliiums may now be planted, being very effective in shrubby borders backed by evergreens or in the open spaces in Rhododendron beds. The bulbs should be planted 6 inches deep, a handful of sharp sand being scattered over each. Gladioli of the ramosus section should be planted, and others for early flowering, placing a little sand over each corm. Plant Ranunculuses and Anemones in deep rich soil with a little sand around them, and sow Anemone seed. Finks should be examined, and any that have been lifted by frost must be pressed into the soil again. Roses and climbers on walls and trellises should now be pruned, regulated, and tied-in. Standard and dwarf Perpetual Roses required to bloom early should now be pruned, but the pruning of the general stock should be deferred some time yet. Sow seed of Sweet Peas and Mignonette for early flowering, and other hardy annuals required in bloom early, selecting a warm situation; and sow some in pots in gentle heat, removing the pots to a cold frame when the seeds have germinated, and place the plants out in April after being well hardened off. Continue to eradicate weeds on lawns; and if the grass is at all mossy, as frequently occurs on poor sandy soil, or if it be thin and poor, a good top-dressing should now be given. Rich vegetable soil is best for this purpose, to which should be added about a sixth of lime, a tenth of wood ashes and a twentieth of soot, about twelve cartloads being a sufficient dressing for an acre. This will make the grass grow better and impart a rich healthy green colour.

Bedding Plants.—Divide and place in heat such plants as Cannes, and start all stock plants required for propagating purposes, and there must be no further delay in sowing seeds of such subtropical and other bedding plants that require time to become sufficiently large for planting, such as Wigandias, Melianthus, Ferdinandias, Acacia lophantha, Cinerarias, Centaureas, Solanums, &c., but Chilian Beet, Ricinus, Zeas, Amaranthus, Hemp, and others of quick growth should not be sown until March or April. Stock plants of Pelargoniums should now be placed in gentle heat for the growth to advance sufficiently for forming cuttings. Tricolor and other choice variegated forms should be treated similarly so as to afford a batch of cuttings, which may be partly severed and left on the plants about ten days to callus, afterwards remove them and insert them in small pots placed on shelves near the glass. Pot-off autumn-struck cuttings of Pelargoniums, Heliotropes, Ageratums, and others likely to suffer from remaining too long in the store pots. Sow seed of Phlox Drummondii, Salvia patens, Dwarf Scabious, and Hollyhock in heat, also Verbena venosa, pushing on the propagation of all bedding plants from stock plants placed in heat for the purpose. Mesembryanthemum cordifolium variegatum will root more readily on shelves near the light than in close moist heat. Herbaceous Lobelias may now be divided and started in gentle heat, they delight in decayed vegetable matter with an admixture of sand. Calceolarias if wintered in store boxes or pans should now be planted out in cold pits or frames, they also delight in vegetable soil. Gnaphalium lanatum also should be transplanted into a pit or frame. Pansies and Violas struck in autumn may now be planted in their permanent quarters; they delight in a rich rather stiff soil. Choice Dahlias

tubers may be placed in heat, plunging them in a bed of old leaves or tan, into which the young shoots root freely; they can then be taken off safely and potted in small pots in loose vegetable soil.

Stove.—Such plants as *Ixoras* and *Franciscea*s may now be potted if they require more root room, but on no account disturb them until the roots become active. In potting such plants they must not be shaken out or have the soil removed as with deciduous plants, only removing any soil, especially near the top of the ball, that is not occupied by the roots. The size of the shift must be regulated by the condition of the roots. The soil should before potting be warmed to the same degree as that at the roots of the plants that are intended to be potted. Plenty of drainage must be provided, and sand added to the soil as may be necessary, about a sixth in most instances being sufficient. In potting make the soil firm with the potting stick, but not as in the case of greenhouse hardwooded plants. For most hardwooded stove evergreens all peat is preferable to an admixture of loam. *Alocasia* Lowi, *A. Jenningsi*, *A. metallica*, and *A. Veitchii* may now be potted, employing a compost of two parts fibrous peat, two parts chopped sphagnum, one part old manure in a dry state, adding a sprinkling of sand and some broken crocks and pieces of charcoal, affording extra drainage. Grown in 7 or 8-inch pots these plants are very effective for decorative purposes. *Alocasia macrorrhiza* variegata succeeds in fibrous loam with a fourth of old manure added, and a little sand. Plants in 8 or 10-inch pots are very effective. *Maranta albo-lineata*, *M. Makoyana*, *M. ornata*, *M. illustris*, *M. Baraquinii*, *M. tubispatha*, *M. rosea picta*, and *M. Veitchii* grow well in a mixture of peat and loam with a sixth of sand. *Pandanus Veitchii* is very useful for decorative purposes, and may be kept in a small state for some time. It succeeds well in loam with a little sand.

A batch of *Caladiums* should be started, especially such as *Caladium argyrites*, *C. Princess of Teck*, *C. Belleymeri*, *C. Wrighti*, *C. Chantini*, *C. Chelsoni*, and *C. bicolor splendens*. The old soil should be removed, and pot the plants in turfy loam with a fourth of well-decayed manure and a sprinkling of sand. Pots 6 or 7 inches in diameter are most useful for *Caladiums*, placing three moderate-sized corms in each or one large one. To have the foliage of good texture the plants should be grown near the light, supplying water sparingly until growth commences. A few more *Gloxinias* and *Achimenes* should now be started, the latter making beautiful basket plants. Wire baskets lined with moss and filled with an admixture of loam and leaf soil with sufficient sand to keep the soil porous will suit *Gloxinias* well. Pot a batch of *Tuberous Begonias* and place them on shelves near the glass. Only small pots need be employed in the first instance, shifting into larger when the plants are producing fresh roots freely. The plants will flower early in summer, and be very useful for decorative purposes. Where stove climbers trained to the roof are planted in narrow borders the soil in course of time becomes exhausted. This should be removed as much as possible without serious injury to the roots, and fill up with fresh compost.

FLORISTS' FLOWERS.

Auriculas.—The long-protracted frost is sadly against the work that ought to be done now amongst florists' flowers. With pots hard frozen (unless where there are heating arrangements, which some growers use) it is impossible to top-dress. Carnations cannot be planted out, *Ranunculuses* planted, and many other very necessary operations performed; yet it is well to be ready, so that when the frost breaks up they may be done. In top-dressing *Auriculas* it is necessary to have the compost for it all ready mixed. The component parts vary according to the ideas of growers, but loam, decayed cow manure, and leaf soil enter into nearly all the recipes recommended. When the soil is very dry, which is likely to be the case after such long-continued frost, it will be better to give the plant to be top-dressed a good soaking before taking off the old soil, as very often as the surface seems moist with the top-dressing it may be that underneath it is quite dry. Where the plants have not been potted in rich compost the following will do very well—half decayed manure, quarter loam, and quarter leaf soil. If there was much manure in the compost, then one-third each will be better. In repotting, the soil should be loosened with a piece of blunt stick, and shaken off to the depth of 1½ inch or more. The plant should be carefully examined to see that there are no symptoms of decay, which if existing should be cut out and the wound dressed with powdered charcoal. The compost should then be put in and gently pressed down. The plants should then receive a good watering and be returned to the frame or pit. This latter direction will show that it cannot very well be done in frosty weather. Whenever the weather permits air should be freely given, taking care to cover up at night; as the blooms begin to rise above the foliage they are more liable to suffer injury from frost, which crumples the pipe and prevents their opening flat.

Carnations and Picotees.—Little can be done with these now. It is too early to pot those intended for blooming in pots, while the ground is utterly unsuitable for planting them out in beds. All that can be done is to see that the plants are clean and dead leaves taken off.

Gladiolus.—Care must be taken that these are not stimulated

to throw out roots. When they are kept in bags the moisture of the corms touching each other tends to this. It is better to keep them, therefore, either laid out in trays or on sand under the stage of a greenhouse. If any of the corms do push roots it is well to pot them in small pots in a mixture of loam and leaf soil, from whence they can be turned out later into the open ground.

Ranunculus.—Here, too, inaction must be the order of the day. They ought to be planted about the 12th of next month, and should be examined to see that no mildew is affecting the roots.

TRADE CATALOGUES RECEIVED.

John Cattell, Westerham, Kent.—*Catalogue of Vegetable and Flower Seeds.*

Drummond Brothers, 82, George Street, Edinburgh.—*Catalogue of Roses, Lilliums, Vegetable and Flower Seeds.*

W. P. Laird & Sinclair, Dundee.—*Catalogue of Vegetable and Flower Seeds.*

Harrison & Sons, Leicester.—*Catalogue of Vegetable and Flower Seeds.*

S. Dixon & Co., 84, Moorgate Street, London.—*Catalogue of Flower and Vegetable Seeds.*

Ormistoun & Renwick, Melrose.—*Catalogue of Flower and Vegetable Seeds.*

James Carter & Co., High Holborn.—*List of Popular Collections of Flower and Vegetable Seeds.*

TO CORRESPONDENTS.

ADDRESSES (G. A. S.).—You will find the address you require in our advertising columns of last week. (H. E.).—The address you ask for is the same as it was in 1878.

AUTUMN AND WINTER-FLOWERING PLANTS (D. Warren).—As you require plants of moderate size, and such as will thrive in a temperature slightly above that of a greenhouse, you would find a collection of *Pompon Chrysanthemums* very useful for autumn flowering, especially such varieties as the White and Golden Cedo Nulli, Mademoiselle Marthe, Mrs. Hunt, Brilliant, Modèle, Fanny, Bob, White Trevenna, Rose Trevenna, and Mrs. Dix. The following plants would also be suitable:—*Schizostyle coccinea*; *Salvia Heeri*, *S. splendens*, *Acacia armata*, *A. lineata*, and *A. Ricana*; *Epacris Vesta*, *Viscountess Hill*, *Lady Penmore*, *The Bride*, *alba odorata*, and *hyacinthiflora rosea*; *Erica hymenalis*, *Primulas*, and *Scarlet*, White, and Salmon *Vesuvius* with other *Zonal Pelargoniums* prepared for winter flowering.

LIQUID MANURE (Ignorance).—Unless a considerable amount of water finds its way into the stable tank the liquid will be very powerful, and should be diluted with six times its volume of water before applying to the crops. If a portion of water, such as that used in washing down the stable, drains into the tank proportionately less amount will require to be added when the liquid is drawn from the tank and used; it is, however, safe to err on the right side, and apply the stimulant rather weak than too strong. It is a valuable application for all kinds of vegetable crops, and may with advantage be applied to Vine borders in summer if the Vines need such support. If you throw some chloride of lime into the tank in summer the contents will be rendered less offensive.

REMOVING VINES (J. R. C.).—With the consent of the landlord the Vines can be removed with safety provided due care is exercised in taking them up, preventing the roots drying in transit, and replanting. Commence by digging a trench at the same distance from the base of the stems as the roots are in length. The trench should be wide enough to afford room for working, and deep enough to be below the roots. Sever the roots at the trench, and working under them and upwards with steel forks; liberate the soil from them, throwing it back with shovels. Keep the roots as moist as possible, and before planting cut off any injured portions. Plant carefully in good loam, covering the roots 5 inches deep, and mulch the surface of the border with manure. Allow the Vines to start naturally, applying no fire heat, and crop very lightly until they are established and have made strong growth.

WATER FROZEN IN PIPES (T. D.).—You must not heat the water in the boiler until the ice in the pipes has melted. We have known serious damage done by the pipes bursting where the water has been heated under such circumstances as you describe. The cold water supply pipe cannot act as a safety valve, as the steam generated cannot pass through the ice in the flow pipe and so reach the medium of supply. You may thaw the ice in the pipes by pouring warm water on them, as bursting does not occur when the ice is thawing but when the water is freezing, although the effects of a rupture may not be visible at the time.

MANAGEMENT OF LIGHT SOIL (W. M.).—As the soil is poor as well as light, and is 18 inches deep, we should not bring to the surface any of the sandy gravel, nor should we loosen it if the water drains away freely. We should not apply manure in the autumn, but reserve it until the spring, forking a portion of it in just before the crops are sown and planted, applying the remainder as a surface dressing. Fertilisers applied during showery weather in summer would greatly benefit the crops. The application recommended last week to "GRANVILLE" will be equally suitable for your garden. Lose no opportunity of obtaining stronger soil, such as ditch and roadside trimmings, for such additions will prove very advantageous, both by gradually deepening the soil and improving its texture.

ROSES IN POTS (Bury).—The plants have probably suffered from the wet and dull summer, and have not matured their growth. Had you potted and top-dressed them immediately after flowering in the spring instead of in October, they would have been in better condition than they are now. We should not repot them now, unless, indeed, they are in too large pots and the soil is sour. In this case it would be wise to remove a good portion of the soil and repot in smaller pots, employing a fresh sweet compost of turfy loam. If on turning the plants out the roots are not matted round the sides of the pots your Roses are overpotted; 8 or 9-inch pots are sufficiently large for growing fine specimens capable of producing twenty to thirty blooms each. As the growth is so sickly you had better at once prune the shoots a

little closer, cutting to the latent buds on the more matured wood, and you may hope for stronger growth and better blooms, provided—and this is all-important—that the roots are in a healthy state.

PRUNING VINES (Jaw).—Assuming that the rods reach the top of the rafters, and the growths to which you allude are produced from the spurs and termed lateral, such laterals should be cut off as close to the old rods as possible consistently with retaining a good bud for producing strong growth and bearing fruit during the season. If you leave about two eyes at the base of each lateral both will grow and probably show fruit, and you can retain the most promising, rubbing the other off. Overcrowding of the laterals is the ruin of many Vines. The side growths ought not to be nearer each other than 18 inches, and the main rods should be at the least 2 feet asunder. The tips of the laterals should be pinched off at two or three leaves beyond the bunch, according as there is room for the foliage to develop. The first pinching should be given as soon as the bunches are fairly visible, and stopping of the growth must be continued throughout the summer. If the Vines have not reached the top of the house the terminal growth may be shortened to 3 or 4 feet. On the other hand, if there is not room for further extension, and the old rods are weak and unfruitful, you may train one of the laterals which issues from near the base of the Vine up the main rod to a height of 4 feet, shortening it there, cutting off also all the spurs from the main rods to the same height, and in a few years you may thus renew the Vines without losing many Grapes. If the rods are healthy and fruitful adopt the spur system of pruning first proposed. The Vines should be pruned at once. Provided abundance of water is poured on the roots near the fire and the soil is kept constantly moist, not on the surface merely but throughout the entire mass, the roots there will benefit the Vines.

VINE BORDER (R. R.).—Could you not, instead of excavating the rock raise the border above the surface? The rock surface will not need to be concreted, but if you excavate for the border it will be necessary to have a drain or drain with proper fall and outlet so as to carry off superfluous moisture; otherwise the excavation will only be a receptacle for holding water. Nine inches to a foot in depth of brickbats should be placed at the bottom for drainage, and over this you will need 3 feet to 2 feet 6 inches of depth of border. The most suitable soil for the border is turfy loam, the top 3 or 4 inches of a pasture where the soil is good loam inclining to be light rather than heavy, chopping it up in pieces of 4 to 6 inches square, adding to every ten parts of loam one of old mortar rubbish, a twentieth part of charcoal, and a fortieth part of half-inch bones, the whole being thoroughly incorporated.

ROSES INJURED BY FROST (E. J.).—The severe frost of December has destroyed many Roses, not only to the line of the mulching but altogether, great losses occurring among standards. Mulching is a safeguard against frost in the case of dwarf Roses, and injury is in no way attributable to it, as your remarks appear to imply. We can only advise you to replace such Roses as are dead, and cut back those injured to the line of the mulching, deferring it until the close of March.

PLANTING ASPARAGUS BEDS (X. F. Z.).—The roots from a neighbouring garden that have been productive for a number of years are only fit to be taken up and forced if removed at all, and afterwards thrown away. One or at most two-year-old plants are proper for planting a new bed, planting them when they are commencing to grow.

HEATING GREENHOUSE (R. F. J.).—The piping you propose to employ will be sufficient to exclude frost in the severest weather without heating the water to a high temperature. The only objection to having the stove boiler within the house is liability to smoke and other products of combustion escaping along with dust, for which reason the boiler will be better placed in a shed at the back of the house.

DWARF PLANTS FOR CARPET BEDDING (D. C.).—The following may be raised from seed: *Stellaria graminea* aurea, *Semprevivum labuliforme*, *Pyrethrum Golden Feather*, *P. aureum laciniatum*, *Hebeveria glauca metallica*, *E. secunda glauca*, *R. pumila*, *R. secunda*, *R. metallica*, *Ceanothus tomentosum*, *Lobelia pumila grandiflora*, *L. pumila magnifica*, *Sedum cereum*, and of plants increased by cuttings:—*Alternanthera amabilis*, *Anemone spectabilis*, *paronychioides*, *versicolor grandis*, *magnifica*; *Antennaria tomentosa*, *Gnaphalium lanatum*, *Iresine Lindenii*, *L. Herbstii*, *Kleinia repens*, *Leucophyton Brownii*, *Mentha Pulegium gibralitica*, *Pachyphyton bracteatum*, *Sedum acre variegata*, *S. acre elegans*, *S. glaucum*, *S. lividum*, *Semprevivum montanum*, *S. californicum*, *Mesembryanthemum cordifolium variegatum*, and many other succulents.

HARDY PERENNIALS (J. S. R. P.).—The following plants will maintain a supply of flowers nearly throughout the year:—*Helleborus niger maximus*, *H. orientalis*, *H. oelchicus*, *Branthia hymalis*, *Snowdrops*, *Adonis vernalis*, *Allium grandiflorum*, *A. ciliatum*, *Alyssum saxatile compactum*, *Anemone apennina*, *A. japonica alba*, *Anthericum Liliastrium*, *Antirrhinum var.*, *Aquilegia vulgaris* var., *Arabis albidia variegata*, *Aster Amellus major*, *A. longifolius formosus*, *Aubrieta deltoidea grandiflora*; *Calochortus luteus oculatus*, *Campanula aggregata*, *C. isophylla* and var. *alba*, *C. ranunculoides*, *Colchicum autumnale*, *C. autumnale album plenum*, *Convallaria majalis*, *Coreopsis auriculata*, *Corydalis cava albiflora*, *Crocus* var., *C. speciosus*, *C. mativus*, *C. Sieberi*, *C. nudiflorus*, *Cyclamen hederifolium*, *Delphinium belladonna*, *D. Madame Richalet*, *Dianthus pargens*, *D. floribundus*, *Dielytra spectabilis*, *Doronicum Clud.*, *Epilobium latifolium*, *Erodium Manescevi*, *Fuchsia corallina*, *Gentiana acaulis*, *Geranium Andreei*, *Gum coccineum flore pleno*, *Helleborus multiflorus plenus*, *Hebeveria lutea*, *Hepatica angulosa*, *H. triloba* var., *Hyacinthus amethystinus*, *H. candicans*, *Hypericum calycinum*, *Iberis coraeifolia*, *Iris germanica* var., *Jasione glutinosa*, *Lathyrus grandiflorus*, *Leucojum autumnale*; *Lilium candidum*, *longiflorum*, *tenniflorum*, *Urgula splendens*; *Lychnis chalcidonica plena*; *Myosotis distiflora*, *Narcissus* var., *Nepeta Mussini*, *Oenothera macrocarpa*; *C. Youngii*, *Poaia* var., *Papaver nudicaule*, *Pentstemon* var., *Pink* var., *Carnation* var., *Pyrethrum* var., *Phlox* var., *Potentilla hybrida* var., *Primula acaulis* var., *P. auricula* var., *Pulmonaria aurea*; *Ranunculus amplexicaulis*; *Saponaria caucasica flore pleno*, *Schizostylis coccinea*, *Sedum spectabile*, *Senecio pulcher*, *Sylvestrium grandiflorum*, *Spiraea Filipendula plena*, *S. japonica*, *S. palmata*, *Statice latifolia*, *Stenactis speciosa*, *Sternbergia lutea*, *Tritoma Uvaria glauca*, *Trollius europaeus*; *Veronica amethystina*, and *V. prostrata*. Many others might be named, and you will find lists of "Twelve Hardy Herbaceous Plants for the Month" published in our columns during several months of the past year.

DOUBLE-GLAZING Vinery (Economy).—We do not think your proposed plan will answer your expectations. We have known double glazing adopted and fall when applied to plant houses. The enclosed air being

such a great non-conductor of heat must necessarily obstruct the transmission of the sun's rays, and render your house not only too cool in summer for the Vines but also in winter for the plants, seeing that all the heat you can obtain is from the sun. Were heat generated in the house by a stove or other apparatus, then the double glazing would prevent its escape, and the house would thus be rendered warmer; but as all the heat on which you desire to rely must come from the sun, you will prevent the admission of such heat through the roof and sides of the house if you enclose 2 or 4 inches of air all round by double glazing.

PALEMS FOR GREENHOUSE AND STOVE (Young Gardener).—*Chamaerops* *Fortunei*, *Latania borbonica*, and *Scaevola elegans* would succeed in a greenhouse temperature. The others you mention require to be grown in a stove. Employ as soil good fibrous loam and sand, well draining the pots, and be careful not to overpot the plants.

BOILERS (J. S. Stamford Hill).—From our experience in heating with boilers of the kind you name we find there is practically no difference between them. We have worked one of each kind for a number of years, and are quite unable to determine which is the best.

HEATING GREENHOUSE AND PIT (Young Gardener).—The pipes to which you allude are 4 inches internal diameter, and hence are called 4-inch pipes. So far as we understand your letter you cannot heat the pit from the greenhouse, but were the boiler placed at the end of the pit you might successfully heat both structures.

POTATO CULTURE (Tyro).—The weight you name has never been produced by planting one whole Potato and leaving it to grow and produce a crop; but by planting a large tuber having a great number of eyes in leaf soil in a frame, and making cuttings of the growths as fast as they are produced, striking them in heat, growing the plants in pots under glass, hardening them off the same as Dahlias are treated, and planting them in specially prepared soil, the weight mentioned may possibly have been attained.

HERBACEOUS PLANTS FOR AFFORDING CUT FLOWERS (R. P.).—The following flower during the period you name in the neighbourhood of London:—*Aquilegia corulea*, *A. chrysantha*, *A. glandulosa*, *A. pyramidalis*, *Campanula trachelium*, *C. trachelium alba*, *C. nobilis*, *C. nobilis alba*, *C. carpatica*, *C. latifolia*, *Hebeveria disticha*, *H. Thunbergii*, *Primula cortusoides*, *P. japonica*, *Alstromeria aurea*, *A. patetica*, *Helianthus Hooperii*, *Lythrum roseum superbum*, *Lupinus polyphyllus*, *L. polyphyllus albus*, *Morina longifolia*, *Anemone japonica*, *A. nemorosa*, *Anemone alatum*, *Crucianella bicolor*, *Coreopsis lanceolata*, *C. auriculata*, *Dianthus superbus*, *Crucianella stylis*, *Potentilla formosa*, *P. McNabiana*, *Linaris triornithophora*, *Phlox divaricata*, *P. ovata*, *Tradescantia virginica*, *Dicentra taurica*, and *Oenothera chrysantha*. You might also grow such plants as Sweet Williams, Delphiniums, Pinks, Antirrhinums, and Wallflowers.

CAULIFLOWERS AND BROCCOLIS (P. W.).—There is no clearly defined line between Cauliflowers and Broccoli, as both are varieties of *Brassica oleracea*, as are also the other vegetables which you name. An accepted distinction between Cauliflowers and Broccoli is, that the former are more tender than the latter, and may be sown and come to maturity for culinary purposes the same season. Broccoli requiring a much longer time to produce heads have to grow the whole of one season, pass the winter, and arrive in a fit state for use early the following year. The head of the Cauliflower may be described as a concrete form of the inflorescence of *Brassica oleracea* var. botrytis.

HEATING WITH SANITARY PIPES (R. Grindrod).—Mr. Jowsey's mode of heating garden structures with glazed sanitary pipes will be detailed by him next week.

NAMES OF FRUITS (R. Crossing).—The Pear is the Achan, a very old variety which is of great excellence in Scotland and the north of England, but comparatively worthless in the south. It is supposed to have been introduced to Scotland from Norway at a remote period.

NAMES OF PLANTS (N. S.).—*Acacia acicularis*. (*Suberfer*).—1, *Begonia Helens Uhder*; 2, *B. virens*; 3, *B. heracleifolia*. (*Savut*).—1, *Iresine Hecetii aurea*; 2, *Begonia argyrostigma*; 3, resembles *Rhynchospermum jasmoides*, but we cannot undertake to name flowering plants from leaves alone. (*A Reader*).—1, *Chelidonium argenteum*; 2, *Davallia canariensis*; 3, *Asplenium attenuatum*; 4, *Selaginella Widenovii*; 5, *Polypodium appendiculatum*; 6, *Onychium japonicum*.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

LAYING DOWN LAND TO PERMANENT PASTURE.

THIS is a very important subject, when we consider the influence of soil, situation, and climate upon pasture; and it has a further significance when we realise the fact that the cereals and pulse do not pay the expenses consequent upon their culture in adverse seasons. We shall then be likely to ask ourselves whether the climate of this country is on the average of years to be depended upon for the growth of cereals, &c., with profit. There is again another fact, which is well known to practical and experienced farmers, that when the seasons favour the growth of an abundant crop of wheat it is usually at the cost of the Lent grain and pulse crops, as well as the produce of hay grown upon arable and dry pasture lands. For an illustration of this we can refer to the great wheat produce of the years 1834, 1844, 1854, 1864, 1874, together with others of a similar character. In each of these seasons the barley, oats, peas, beans, and hay crops were very deficient. These seasons therefore, although exceptions, may show that in the average of season

in the climate of the United Kingdom the produce of permanent pasture is more equable and remunerative than grain and pulse upon certain soils and districts. This brings us to a point when we must consider what soils are best for laying down into permanent pasture. If we can only feel that we have entered upon a new era in farming we shall be obliged to admit into our list of soils, to be laid into pasture, some of those which have hitherto been excluded, and thought better adapted for the growth of cereals and pulse on the one hand, or the growth of cereals and root crops on the other hand. If we can only admit that the ordinary course of farming upon strong lands, and also certain soils of a gravelly or calcareous nature, is now unremunerative we have no alternative but to apply them to another object, and nothing seems to meet the case better than the laying down into pasture. Labour, which is now one of the great items of expenditure upon all cultivated land, is not only the most costly item, but the most difficult to obtain with which the home farmer has to deal; and when it is considered how little labour is really required in connection with permanent pasture it possesses a strong claim upon our attention.

Having thus prefaced our subject we now proceed to state what are necessary for bringing land into a condition for laying down into permanent pasture. Chalking if the soil be sour and inclined to produce certain weeds, draining if too wet, manuring if poor in condition, cleaning if foul with couch grass and weeds, fallowing or paring and burning if cold and adhesive from the want of previous tillage, and laying the land into form for the reception of the seed, having due regard to the nature and situation of the soil. When the land is too wet draining is of primary importance, and for the method of draining on heavy soils we must refer the home farmer to the article given in these pages on the 25th of September and 2nd of October last, but the draining of springy soils we intend treating under the heading of "Deep Draining" in the course of a few weeks. Our remarks on draining heavy soils had reference chiefly to arable land under cultivation. Now, there is in our opinion a great difference between the draining of arable and pasture land, because we have found the former requires thorough draining, whereas some of the best pastures in the midland counties have been seriously injured by thorough draining. This applies particularly to those strong soils which owe their fertility to the large amount of potash they contain; and although at certain seasons the cattle tread them very much, yet when they have been drained they contract and shrink so in dry seasons that the herbage dies off during summer. We therefore recommend that the draining should not be carried to too great an extent upon strong soils before laying down, for we hold that such land is never too wet for pasture if it is properly trenched to carry off rain water. The best test is after being laid down a few years, for if it then produces rushes it may be drained; but we have always found it very difficult to say whether rushes will appear in the future or not.

The chalking of land is a matter which cannot be safely neglected where the land requires it, because we have no land which is deficient in it that will produce a profitable crop, whether of cereals, pulse, roots, or grass. Although the application is in some instances very costly it is a great necessity, and it is only in some cases that marling and liming is a substitute that can be advised; in fact, it is the foundation of a successful growth of grass of good herbage and feeding quality. Manuring is also to be considered, for we must not expect that grass crops or pasture can be grown or established without the land being made sufficiently rich by manure. This is a large item, to be arranged in accordance with the nature of the soil, for although some lands are found sufficiently rich to maintain its fertility without any aid by ordinary manures or artificials, this only goes to show that the home farmer contemplating to lay land into permanent pasture should have the soil, especially the subsoil, analysed. We had a peculiar instance of this upon our property. The soil being a strong clay was so productive that it had borne full crops for sixty years without any manure being applied; being, however, occasionally subject to the fallow process for cleaning and ameliorating the surface. Although this sort of land, which formed a portion of three separate fields, and was to all appearance like the other portion of the fields, yet upon analysis it was found to be rich in potash and some other elements, and had this land been laid into pasture for a permanency there is no doubt that it would have continued to produce grass of good feeding quality without being manured. This circumstance we maintain should induce the home farmer to have the land analysed before laying down, in order that it may be understood what the land was deficient in, and thus decide the question of what manures should be added.

The next thing to be understood by the home farmer is that the land should be thoroughly clean and free from couch and weeds, at least as far as deep-rooted weeds are concerned, for the annuals will be sure to appear the first year after seeding, even when the land has been fallowed with great care and judgment. We must refer the home farmer to our article on paring and burning, lately given in these columns, as being one of the best modes of cleaning

and manuring at one operation all land intended for permanent pasture. There are, however, several other ways of fallowing or treating the land before the final sowing of the grass seeds. One mode is to grow a green crop, such as vetches, trifolium, rape, &c., and feed off with sheep on the land. Another mode is by making a long winter and summer fallow, in order that by tillage and exposure to the alternations of the climate the land may be made perfectly fine, soft, and kind for the reception of the seed when sown on the fallow surface. A third plan is to sow the grass seeds in a corn crop, which should be sown rather thinly or widely drilled, say a foot, between the lines, to give life and light to the young grass plants. In such a case, however, the land should not be in too high a state of cultivation as regards manure, otherwise the crop of grain may be too bulky and become laid to the injury of the young seedlings; it is therefore better to delay the application of such manures as may be required until after the harvest of any white straw crop.

(To be continued.)

WORK ON THE HOME FARM.

Horse Labour.—Not being lately employed in cultivation of land in consequence of the frost, the horses have been confined to the work of carting dung on to land intended for roots, also in making heaps in the fields ready to be laid out and ploughed-in or ridged-in for potatoes and mangold crops. For potatoes of the late varieties we think that the land should be laid into wider ridges—say 8 feet apart. This will not only give sufficient room for working the horse hoe between the hills but the plough also. In using the plough the method is to turn away two 6-inch furrows from the hill, and after the lapse of a week or ten days to turn them back again towards the hills, and this will leave a considerable furrow at mid-distance between them. The hand-hoeing of the potatoes on the ridge may then be done, after which the final earthing-up of the plants can be performed, turning two 6-inch furrows towards the growing plants. This if done properly will leave a considerable depth of furrow between the hills, and much greater than is usually the case. The advantage of this is great, especially when the double mould board plough as a last operation is passed along the valley between the ridges, as any excess of the rainfall will the more quickly pass off, and on account of the distance of 8 feet between the rows there will be a free circulation of air and sunlight amongst the growing crop. We have met with various instances where in the late varieties of potatoes the increased width between the lines has resulted in an increase of the crop, and the hills being laid drier the tubers are less subject to disease. As soon as the weather becomes mild and open ploughing for early peas may be commenced; but we advise the home farmer not to begin ploughing until the land is sufficiently dry for the seed to be sown or drilled as fast as the land is ploughed, because, like some other farm crops, peas do not thrive upon a stale furrow. We have seen instances of this frequently, when the greater portion of a field has been ridged up and mounds have followed before the seed could be sown, that the other part of the field which was ploughed and sown directly has invariably produced the best crop. The next horse labour will be the ploughing for and drilling of beans, and we prefer the early varieties, particularly when they are required for use on the farm; in which case we like to drill some late peas or winter vetches with them, as both beans and peas seldom suffer from the aphides in the same season, and this plan we have found to reduce the risk attending the growth of pulse crops. If, however, the season should prove favourable for pulse crops the mixed crop often turns out an enormous yield. Another mode of growing beans and root crops in alternate lines we can recommend, as we have had great success in this double culture. For this purpose we grow the early Mazagan bean or otherwise the garden Longpod, and drill or dibble them 2½ feet apart between the lines, thus giving room for growing a line of mangold and beans alternately. This offers a good opportunity for the home farmer to arrange with some seedman to take the crop of beans for sale as seed the following year, and the lines being so wide apart the beans will be sure to yield well and furnish a fine sample for seed. The mangold crop, too, will be good if the land is rich in manure and kept clean. We have grown 25 tons per acre, which is a valuable crop, taking the beans also into consideration.

Hand Labour.—Planting fruit trees, such as pears, apples, and plums, may now be done in the first open weather. We recommend the home farmer to turn more attention to this matter than he has usually done; and if the proprietors of home farms could make up their minds to remove some oak, elm, and especially ash trees, and to plant instead fruit trees on the boundaries of pastures and on the sides of farm roads, it would yield in many soils and situations a large return annually, and prove quite ornamental at blooming and fruiting times. The dairyman should be very careful and see that his new milch cows are properly milked, for we have noticed lately instances where the cows were out of profit that their udders exhibited large lumps, showing that in the previous years they had been neglected and not milked clean. This is not only a loss by the cows going dry earlier, but a fruitful source of disease at calving time. The shepherds will have in

many instances to attend to diseased sheep, for in the whole course of our experience we have never known so many animals affected with the coathe or rot, for the butchers say that nearly all the sheep which they kill from the best grazing districts are affected more or less, and show flukes in the liver. This, no doubt, arises from the exceptional season of 1879; but the readers of this Journal will probably recollect that we gave two weeks to the consideration of this subject on July 31st and August 7th last year, when we directed the home farmer how to avoid this disease, which cannot be cured. It really is a very important matter, when we consider how well it is known that certain grass land in wet seasons will coathe sheep, why the farmer does not feed cattle, dairy cows, or stores instead of sheep, especially as sheep injure the pastures more than cattle by eating out the best herbage.

AGRICULTURAL DEPRESSION.

THAT agriculture is in a most unsatisfactory state at the present time no one can deny. It is so from a combination of causes, chief amongst which I believe to be the series of bad seasons we have had. No doubt bad trade and foreign competition have also contributed their share; the two former will pass away, but the chances are that the latter will increase. What the farmer requires to enable him to cope with this latter or any other difficulty in addition to land at a fair value and reasonable conditions as to the use he makes of it, is greater scientific and technical knowledge of cultivation and of the plants he cultivates as well as of the manures he uses; greater attention to the husbanding and proper preparation and application of home made manure both liquid and solid, with more physiological knowledge of the constitution and requirements of the animals he rears or fattens, the nature of the feeding materials he uses, and the proportions likely to produce the best results.

To say that any fair percentage of the farmers of the three kingdoms possess such knowledge would be rather a sanguine statement I fear; and in the absence of proper agricultural training schools, where young men destined to be farmers could receive a course of training after they have finished their ordinary school education, I do not see how so desirable a result is to be brought about. If the landed proprietors of the country were to consider their own best interest they would lose no time in instituting and endowing such schools in every county. To them it is of vital importance that the men who are to farm their estates should have the best possible knowledge of agriculture in all its departments. Let any man with cultural skill travel from one end of the country to the other, and say if he does not see thousands of acres of land undrained; rushes growing where grass or corn should be; small grass fields with great hedges round them, the roots of the hedges sucking the very life out of the soil; dung heaps lying on headlands having their manurial value washed out of them into ditches; farmyards with streams of brown liquid manure running out of them into the nearest stream or pond; the manure in the yards exposed to rain and sun till half its value is gone; land meant for permanent pasture sown down with unsuitable grasses, some of them annual grasses. I might extend this list to maladministration of the animal kingdom with equal justice, but I think I have said enough to show that a change is needed.

I am glad to see that the *Journal of Horticulture* has devoted some of its pages to the discussion of subjects bearing on agriculture. If agriculture in these lands is to hold its own against foreign competition it must copy the garden largely, where much greater attention is paid to minute details than on the farm, and where the value of liquid manure is well understood and not allowed to run to waste. The farm is indebted to the garden for deep cultivation and drill husbandry, and it might borrow much more with great advantage to itself and the nation at large; all have a deep interest in seeing these islands produce the greatest possible amount of human sustenance.—W. THOMSON, *Tweed Vineyard*.

SITTING HENS.

WE have been trying to follow the requirements of the inexperienced poultry keeper through the various stages of the season's progress. We began the year with the ultimate objects to be sought in breeding, thence we went on to give hints on judicious mating of the breeding birds and their management when mated. We come now to a very important part of the work—the choice and management of the sitting hen. All things change in these days, and there seems every prospect of a real and great change ere long in the method of incubation. There is much likelihood that artificial incubation will at last be pretty generally adopted in this country; we do not mean by the enthusiastic fancier alone, or the scientific experimentalist, or the wholesale poultry rearer; but that to the ordinary poultry yard in its ordinary routine an incubator will become as necessary an adjunct as a greenhouse is to a garden. We are not, however, prepared just yet, until we have had the opportunity of personally testing several artificial incubators, to recommend the young fancier to trust all his eggs to them, and prefer, therefore, for the

present to say something about the old-fashioned feathered one provided by Nature.

Chapters on sitting hens are wont to begin with disquisitions on the exact age which it is desirable for them to have attained before being trusted with eggs. We do not take the trouble to inquire into the years or months of broody hens, indeed at this season of the year we are seldom fortunate enough to have such a supply of them as to make us critical on such points. We have often known pullets of six months prove admirable mothers. It is a good plan as hens show signs of becoming broody to give them nests if they have not already got them, which can be removed bodily with them to the sitting house. Of course in a very small establishment, where there are only two or three hens in a run, it can generally be arranged to leave them where they have been laying, or about a large farmstead. Those which have chosen for themselves out-of-the-way retreats may be left in them; but even in these cases there is always much risk of their being disturbed by intruders. As a rule it is far better to give up some house having a run attached to it for sitting hens. In this there should be some close boxes with wire fronts for the confinement of strange or wild birds; but for the home hens, which can be quietly brought in at night, we recommend that each be set in the portable box or basket in which she has been laying. As soon as a laying bird shows signs of becoming broody her nest should be prepared. We prefer round wicker baskets to all other nests; fresh turf or ashes should be put at the bottom, and short straw over. There is much point in doing this beforehand, for no nest is ever at once so well fashioned as the hen fashions it for herself by laying in it a few times; it is then ready for eggs directly she is ready to sit. Hen and nest can be carried quietly together at night into the sitting house, and in nineteen cases out of twenty she will sit on as if in the same place. In the case of a shy bird a rough wicker coop with some sacking on it put over her will give extra privacy.

At the time of removal another exactly similar basket should be placed in the laying house, and any hens which have been laying in the one will not know the difference. This is our general plan with our home hens. It is, however, often necessary to get in extraneous help in the shape of hired or bought broody hens. At times they are a necessary evil. We have known dozens which could be set anywhere, especially when they come from cottages where they are kindly treated and constantly handled. Such are far preferable to birds from large farmyards, where little attention is paid to them; the latter are often wild and unsteady at first, but with patience and management they will generally quiet down. For such we have rows of closed wooden nests with sliding wire doors in front. Ours are raised from the ground with ledges in front of them. We have seen some similar without bottoms standing on the ground, which is perhaps better where there is no fear of rats or other vermin. A refractory hen should be put in at night with some china eggs and left quite undisturbed till the dusk of the next evening, when she may be lifted off to feed and put back again. We have nearly always found this treatment makes such a bird safe for eggs at the end of two or three days. Common sense and observation alone will tell when a hen may be trusted. Eggs should certainly not be given her till she sits down closely and till all the china eggs under her are found hot. A doubtful hen will often warm a few of necessity without properly incubating the whole nest. Now and then hens obstinately persist in standing upon the eggs, cackling and even scratching the nest to pieces. Such birds have probably been moved too soon before really becoming broody, or have been unsettled and terrified. They are generally hopeless; still it is worth while to try them for a few days, now and then quiet and isolation restore their composure.

It is commonly thought that a sitting hen, provided she is of little intrinsic value, requires no attention beyond giving her some food occasionally, and taking care that she does not let the eggs get cold. This is a great error. If no other reason, at least the kindness which we owe to all animal creation should prompt us to attend to the wants of so patient and exemplary a creature; but even selfish motives require this. A good brood will never be hatched and reared by an unhealthy or half-starved hen. The bird has to afford the warmth of life, first to the eggs and then to the chickens, for about three months; this she cannot do without nourishment. It is true that during incubation a hen requires little food. One good meal a day is quite enough. Nature provides that her digestion should go on very slowly. In these early months, when mornings and evenings are cold, this one meal should be given about mid-day. A dust bath of dry ashes or earth should be at hand, and a pan of water, and some grass or green food. Both grain and soft food should be offered to the hen that she may take her choice. She will probably return to her nest in ten minutes; if she does not, or sooner if there be frost, she should be gently driven into the house and replaced on her nest. This daily routine will keep her clean and healthy, and able to impart due warmth to her family when hatched. At present there will be little trouble from vermin. In summer it is often necessary to dust the nests and hen's feathers with disinfecting powder. Neither is it necessary yet to damp the eggs. The

atmosphere is still too moist with the mists of winter for them to require it. When dry spring winds set in they should, during the last ten days of incubation, have a light sprinkling of tepid water daily just before the hen returns to her nest. We believe that many a sitting has been spoilt by overwatering. The eggs of waterfowl set under hens always require slight damping. Such is our *régime* for the sitting house. It has generally succeeded, and thus far seems not likely to fail this year. Our first hen—set in a very cold building—has, notwithstanding the severe frost, just hatched ten strong chickens from ten eggs.—C.

KEEPING DUCKS FOR PROFIT.

I SHOULD feel much obliged by you or your correspondents furnishing me with the following information:—

1st, Which is the best breed of Ducks for egg-producing, and about what number of eggs should a Duck lay in twelve months?

2nd, Is there any advantage in rearing ducklings early in the season? I have been informed that Ducks hatched about the middle of August will lay as early the following season as those hatched in May or June. I feed on sharps, peasemeal, and potatoes, including all table scraps, with not more than two or three meals of maize per week, and the cost per head per week has varied between 1d. and 1.30 of a penny.

3rd, In keeping Ducks for laying, should they be kept beyond their second season of laying? I mean would there be any advantage in so keeping them? I have been told that Ducks lay better in their third season than in their first or second seasons.

I commenced operations on April 5th, 1879, by purchasing one Rouen drake and Duck, and one Indian Runner Duck. I reared twenty-nine ducklings out of forty-nine eggs, and have kept thirteen to lay the coming season. I append copy of my balance sheet, and as I was quite a novice in Duck-rearing, having had no previous experience, it occurred to me that what I have done might be of interest to some of your readers. The breed of Ducks I have at present are Indian Runners.—THOS. WATSON, Lancaster.

Balance sheet from April 5th to December 31st, 1879.

Dr.	£ s. d.	£ s. d.
To 3 Ducks purchased	0 9 6	
2 broody hens	0 6 0	
2 young Geese to fatten	0 7 6	
		1 3 0
Wire netting	0 4 5	
Old timber	0 3 6	
1 box	0 0 6	
		0 8 5
Labour in making small pond, which was not a success and had to be filled up ..	0 3 3	
2 dummy eggs	0 0 2	
		0 3 5
49 eggs purchased for hatching	0 4 6	
Feeding stuff purchased	2 7 5	
		£4 6 9
Cr.	£ s. d.	£ s. d.
By 21 lbs. 10 oza. Gooses at 10d. per lb. (market price)	0 18 0	
5 Ducks used	0 14 6	
1 fowl laid	0 3 0	
		1 15 6
12 Ducks sold at 2s. each	1 16 0	
1 Duck sold for 2s. 9d.	0 2 9	
		1 18 9
123 Ducks' eggs used at 10 for 1s.	0 12 3	
39 eggs (hens) at 1d. each	0 3 3	
		0 15 6
Value of live stock on hand:—		
13 Ducks, say 2s. each	1 19 0	
2 hens, " "	0 6 0	
		2 5 0
		£6 14 9
Deduct expenditure	4 6 9	
Profit	£2 8 0	

NOTE.—The Ducks had been laying some weeks, and the hens had also laid nearly all their eggs when purchased, or the profit would have been more; and it should be borne in mind that I have not taken any credit on the Cr. side of the account for present value of timber and wire netting.

VARIETIES.

THE PRINCE OF WALES AND AGRICULTURAL EDUCATION.—The following extract from a letter from the Prince of Wales to the Trustees and Directors of the Norfolk County School proves how much importance His Royal Highness attaches to agricultural education, a subject which is adverted to in our columns by Mr. W. Thomson. The letter referred to is dated from Sandringham, and states that "at the last meeting of the Council of the Royal

Agricultural Society held on the 10th ult., the subject of middle-class education, especially that in reference to the sons of tenant farmers, formed one of the chief and most interesting topics of discussion. It was generally regretted that so few candidates from this class presented themselves as competitors for the Society's scholarships. The Prince of Wales takes the deepest interest in this question, and at a time like the present it is one of such vital importance to all connected with agriculture, His Royal Highness is anxious to encourage in every way in his power any measure that may be thought likely to prove beneficial to those students who purpose eventually to make farming their vocation and livelihood.

—MR. WILLIAM M'COMBIE, the well-known agriculturist, aged 75, died at his residence (Tillyfour, Aberdeenshire) on Sunday evening. Mr. M'Combie was educated at Marischal College, Aberdeen, and studied agriculture at his father's home farm of Tillyfour. He was author of a manual entitled "Cattle and Cattle Breeding," and his herd of black polled cattle had acquired world-wide reputation, their triumphs at local, national, and international exhibitions being innumerable. Mr. M'Combie's exhibits won highest honours at Smithfield, Birmingham, and other English fat-stock shows, and at international exhibitions at Poissy and Paris gained the international trophies. In June, 1889, the Queen visited Mr. M'Combie's farm, and partook of refreshment at Tillyfour House.

—THE cultivation of beetroot in France has now become an industry of considerable importance. The *British Mercantile Gazette* referring to this subject states, that while only about 481,400 acres of land were devoted to this crop in 1873, the number of acres occupied with beetroot in 1878 was about 1,078,600, thus showing the great increase of 647,200 acres in four years.

—IN the management and care of cows, and particularly those in milk, it is of the greatest importance, says the "American Cultivator," that they should never be excited from any cause. Frights of any kind have a very injurious effect upon the milk, rendering it almost unfit for use. Not only is the quality affected but also the quantity, and cows that have been run from the pasture or dogged will give less than their usual quantity of milk, and also of an inferior quality; while in summer time its keeping quality will be seriously interfered with. Milk from cows that have been run or frightened will sour quicker than that from those animals which have been perfectly quiet. Strange dogs should never be allowed to run in a pasture where there are cows. Under all circumstances, therefore, keep the cows as quiet as possible. Never allow boys to bring them up to the barn in a hurry. Let the animals come up leisurely and lazily.

—CANADIAN AGRICULTURE.—We have received a copy of the report of the Tenant Farmers' Delegates, who were invited by the Minister of Agriculture of Canada to visit the Dominion, and to report on it as a field for settlement. The reports, which are very full and complete, will be more fully referred to in a future issue.

—THOUSAND-HEADED KALE.—A writer in the *Chamber of Agriculture Journal* says:—Everybody speaks well of the Thousand-headed kale. Apparently not only will it produce a much larger quantity of green food of a more nutritious nature than either Swedes, turnips, or cabbages, but will stand the test of a severe winter better than almost any other green crop. Thus, in the truly arctic season of 1878-9, while everything else was cut down and the turnips rotted in the land wholesale, Thousand-headed kale came out of the terrible ordeal with little injury, and we have just seen a statement to the effect that this plant has stood well the late frost severity of November and December. If one-half of what is advanced in praise of the plant be true, it ought to be sown far more generally than it is at present. Variety of food for sheep is well known to promote their health as well as make them thrive better than when confined too much to one kind of food, on which plea alone it would be very wise to add the plant to our field crops. The land should be prepared much the same as for mangold wurtzel, and the seed be drilled by the manure drill in April. The crop will come to feed off on the land any time in winter from October until April.

NEW SECTION FRAME.

It is now well known to all apiculturists that bees build combs more quickly at the sides of the brood nest than they do over it, while in the former position they are much longer sealing the honey. This doubtless has its foundation in the fact, that the necessity or even opportunity for building comb above the brood nest is strictly artificial, while that position is the one above all others favourable to the evaporation of excess of water in the gathered nectar; hence here comb-building is less active, while sealing is most rapidly accomplished. Almost all true progress in the outcome of correct observation, which in this case gives the basis for the suggestion that sections—i.e., small boxes containing a single slab of comb honey, would be produced most rapidly, all other things being equal, by being started in the hive body and

finished in an upper storey. To meet this acknowledged need most of the better hives exhibited during 1879 contained wide frames to take sections to hang by the sides of those devoted to the work of the nursery. Indeed, Mr. Raitt drew attention to

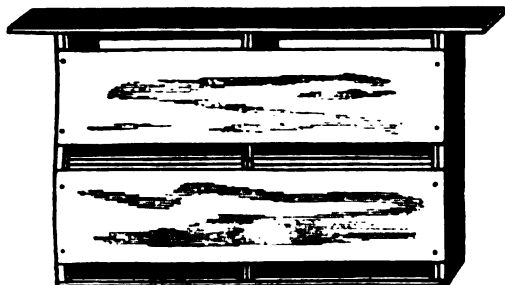


Fig. 17.

this arrangement in your issue of May 29th last. [We reproduce the form of frame to which he then referred, as it will in this connection explain itself.] But in practice these frames are exceedingly troublesome and inconvenient, for any trifling error in measurement is likely to make the section either too tight or too loose; and though the latter defect would appear to be the less perplexing it is hardly so, for all spaces the bees most conscientiously close with propolis, which gives us much trouble in re-arranging for the upper storey. If the fit be exact, then the least deviation from truth in slipping the slender boxes into position at once jams them to each other, and foundation strips come to grief, or guide combs are partly separated from their attachments.

But if the placing of these boxes be difficult their removal is much more so, for they are now glued to each other and to the frame containing them, while the combs built since their introduction demand great tenderness in handling at the same time that they prevent our attacking the boxes except at their edges. Indeed the beginner if at all nervous of his bees would with this arrangement be only likely to make sorry work, and the most experienced find the operation by no means so easy as could be desired.

To overcome this difficulty I devised the frame, if frame it can be called, shown in the illustration. This was exhibited at Long Sutton and received a special prize, and is so simple as to demand but little in the way of explanation. The top bar of the frame is omitted, while the ears A and B are fixed firmly to the tops of the ends. The angle at C is a rigid right angle, but that at D is hinged. As the frame or holder stands in front of the operator, D B falls upon the table, and the lower tier of boxes is placed in position, the first box being pushed to the angle C. The upper tier follows, when B is raised, and all are at once held together. The weight of the frame and boxes, as the former hangs in the hive, serves to keep D B to the perpendicular, while the strips of tin for separators may be most expeditiously fixed by four ordinary drawing pins for each, which will do duty an indefinite number of times, and so in the long run prove no more expensive, although immensely more convenient, than common tacks. The separators need not be pierced with holes as represented in fig. 17; but if all be kept, as they ought to be, of one gauge, then the drawing pins can be permanently fixed in the uprights of the holder above and below the separator when correctly placed as it is in fig. 18, and their broad flat heads will give it every security. I said permanently, because the removal and replacement of the supers is by no means needful; for when the upright, D B, of the frame is brought into position the ends of the tin slip can in a moment be passed in behind the pins, and if a small amount of curl be given to it, and its round side be placed next the section boxes, it will rather

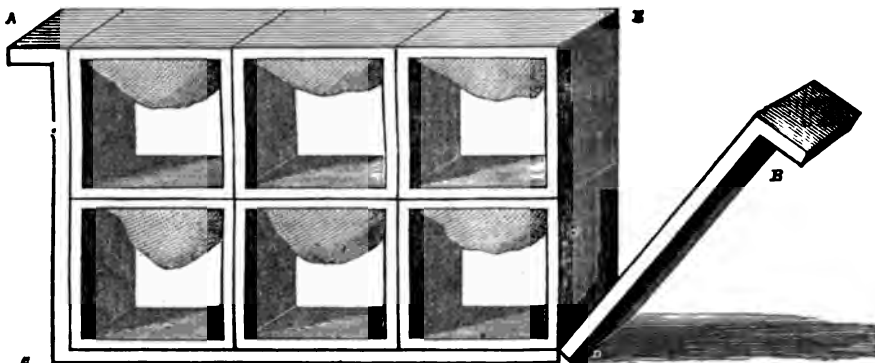


Fig. 18.—Cheshire Section Holder.

press against them than show any tendency to sag away. When it is desired to remove the boxes, after lifting the holder from the hive, the hinged upright is drawn away, and the separators are at once freed, while the first section at E presents two of its sides to our unimpeded grasp, permitting us without jar or wrench to part it from its fellows, which can in turn be handled in the same facile manner. To refill the holder with empty boxes and to readjust the separator is but the work of a few moments. In fig. 18 the sections are all of one size, but in practice it will often be found desirable to have some double the length of the others. Their arrangement can be easily understood by supposing one of the uprights between the boxes in fig. 18 to be absent. To those who use the frames as described by Mr. Raitt I would suggest the cutting of the top bar through the centre, which will without breaking any nail holes or tenons, as the case may be, give play enough to greatly reduce the difficulty of handling, though it would rather tend to sagging of the bottom bar. Boxes in shallower frames similar to that described and carrying one tier only can be hung in an upper storey, but I would recommend the crate as exhibited in Mr. Hooker's hive.

Facility in the removal of sections is of greater moment than simply giving comfort and saving time to the operator. Difficulty here means frequently some fracture, at first perhaps slight and almost imperceptible, in the attachments of the comb, but this sets the honey bleeding while the comb loses its evenness of tone, for a reason some may not have observed. The airtight waxen covers which we call sealing do not touch the enclosed honey unless the cells get slightly damaged; the covers then become semi-transparent, losing their solid white character, much to the disadvantage of the appearance of the comb.

For heavy supers solidity—i.e., rigidity of build, is of primary consequence for the reason sketched above, and on this account no supers of wood do I find in any way comparable to the Stewarton.

Splendid slabs of honeycomb in these will bear an amount of handling which would bring most others to grief, or at any rate start running, which would involve loss of beauty as well as weight.

Our poor bees during this severe dip of the thermometer are best left alone, while the thoughts and perhaps the hands of many bee-keepers may be turned to hive-construction, in which case I would venture to advise that the hives be made long enough from side to side to take frames for sections in the body as well as to admit of ample expansion of the brood nest. From my point of view, and I know many will agree with me, hives are here ordinarily painfully cramped. It is possible and often desirable to give little space in a large hive, but it is not possible to give ample space in a small one.—F. CHESHIRE, *Avenue House, Acton, W.*

COTTAGE BEE-KEEPING.—No. 3.

I BELIEVE the old notion still prevails generally among cottagers that it is unlucky to buy bees. To this funny idea no doubt it is mainly owing that there are comparatively so few who keep bees. The only other difficulty in the way of cottage bee-keeping is of course the "ill luck" which so often follows the common management; hence it is felt to be too risky a venture to lay out much money in starting an apiary which may come to nothing in a year or two; but if chance brings a stray swarm to pitch on an apple tree or currant bush in the garden well and good. This is tempting, and a most promising piece of good fortune. Is it too much to say that luck alone befalling the rustic in this fashion has led to the establishment of nine-tenths of the cottage apiaries in England?

It matters little, however, in what way the bees are procured. If they come of themselves so much the better. In this case, or if a swarm is procured elsewhere, let them be hived immediately. It is

a bad plan to wait till evening, for often the bees will swarm away again; this, indeed, is usually the case with prime swarms. Second or after swarms having young queens are not so particular; still it is safe and wise always to have swarms as soon as possible, and they ought to be put at once on the stand which they are intended to occupy—that is to say, as soon as they are collected together in the hive. The reason for this advice is that bees begin their labours without idling a single unnecessary moment; therefore, no sooner is the whole body gathered together and the knowledge pervades the hive that the queen is safely among them, than they begin at once to bestir themselves. So off they go, after carefully noting the spot of their new home; but if when they come back again the hive has been moved to any distance the poor insects are lost in numbers, therefore it is best to locate them at once on their permanent stand. On the whole, the best time to begin bee-keeping is in the late spring or early summer, and with swarms rather than with old stocks. There can be no doubt that the bees of a swarm are especially on the alert and active. Their instincts are all awake and in full exercise, hence the extraordinary diligence which they show, and the busy way in which they occupy every spare moment early and late in the day. If the swarm is strong, and comes in good time and in a good season, it will fill its hive with comb and brood in an incredibly short space of time, and lay up a good store of honey against the coming winter.

If the swarm happens to be a small one less, however, must be expected of it. If possible it would be worth while to get another swarm and add it to the other. How to do this will be explained further on. The gain would be so much the greater in the end. When I have remembered Rule No. 7, which I gave in the last paper—"Never put your hives against a wall, or with their back to a hedge." It is difficult to get at them in either position. To manage bees comfortably there should always be a dry walk behind them. In this way you may come and go with little risk of being stung, and without undue interference with the bees; moreover, there is less danger to the bees arising from excessive heat or the strong current of air which usually sweep along a wall from the quarter facing it in high winds.

Now as to hives. To the cottager I suppose the straw hive will remain the popular and appropriate bee home. Straw as a cheap, and in many respects suitable, material for hives has its advantages. It is cool in summer, and warm and snug in winter; and with proper care, if well made, it will last a number of years. Besides, it is in possession of the field; and we all know how that "possession is nine points of the law." Nor do I think that Hodge & Co. have wit enough or enterprise enough to manage a wooden hive in any degree better than a hive of straw. I am writing, be it remembered, for the benefit of this class—not that I suppose they will see what I have written here; but some of those who do read these pages may be taught to instruct these poorer neighbours according to the advice given here. I say, then, Let the cottage hive be of straw, only in future let a stronger-built and much larger hive be used. I have said, "Use none smaller than such as would hold from a bushel to a bushel and a half of wheat." As to a standard and uniform hive of one size everywhere I do not pronounce in favour of it, for the simple and sufficient reason that in a poor honey district the larger hive (one and a half bushel) would be much too large. The bees would fill it with comb, of which no great quantity would ever be filled with honey, while much of it would be destroyed by mildew or wax moth in poor seasons. Let the bee-keeper be guided in this matter by the circumstances of the country in which his lot is cast. If he lives in a good honey-supplying district he should by all means adopt the larger hive. Be it observed, however, that the common hive which is usually sold all over the south of England is much too small, even for the poorest country.

Whatever size of hive be adopted after due consideration let them be always of the same size, flat-topped, with a hole of 2 or more inches in diameter at the top. If the top be of wood worked upon the straw, and if it have a hoop of wood at the base, it will be all the more durable. The hole can be conveniently closed by a bit of slate. To complete this improved cottage hive another much smaller hive to hold about 15 lbs. of honey should be procured. This is usually called a cap or super. It need not be flat or straight-sided like the main hive, but we like the common "skep" or "lippen," only smaller. It will be found very useful when the lower hive is full of bees and brood to remove the bit of slate off the hole and to let the bees come up into the cap. Whenever the bees "hang out," showing that they are too crowded in the hive below, they should at once have this upper store room given them. They will go straight into it, and in good seasons a beautiful lot of honey will be stored here, often before the hive swarms. A cottager in my neighbourhood, the only one whom I have so far found a willing pupil in bee-keeping, has for many years been in the habit of taking a cap filled with the parent honeycomb in this manner.

It is important that this cap should fit so nicely on the top board of the hive that no bees can get in and out between it and the board. However big the hive, only one entrance should be allowed. It seems hard to make the bees in the cap journey all the way down to the bottom entrance before they can get into the

open air; but on the whole long experience has found that one entrance, and one only, at the bottom of all should be permitted.

The whole hive thus complete should be well covered with a good hackle of straw, which must be renewed from time to time. Let the straw reach down just below the bottom board, so as to shoot off every drop of rain. To steady the whole and protect the hive from wind a few withy sticks may be fixed in the ground and drawn and tied together at top of all.—B. & W.

OUR LETTER BOX.

INCUBATORS (C. H.).—We think Christy's incubators can be seen at 185, Fenchurch Street, London; but it would be advisable to write to Messrs. Thomas Christy & Co. at that address for the particulars before visiting the establishment.

FOWLS FOR LAYING (H. B.).—Few fowls lay better than the Spanish, and none give finer eggs. The best sitters and mothers are Cochins. Even if you do not require chickens you will find it advantageous to have a male bird in your run. No one can answer your question respecting food, as all birds do not eat the same quantity, neither should any birds be fed exclusively on Indian corn. We give soft food in the morning—bran and barley meal mixed to form a crumbly mass, scraps of grain at midday, and a good feed of corn at night, giving as much each time as the birds eat readily and no more.

THRUSH GAPING (Boy of Kent).—Put a little Stockholm tar into his drinking water, and give it plenty of lettuce leaves or any other green food which it will eat.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 33' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.					RAIN.
	Baromet- er at 35° and Sea Level	Hygrome- ter.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature.			
		Dry.	Wet.			Max.	Min.	In sun.	on grass.		
1880.	Inches.	deg.	deg.	E.	deg.	deg.	deg.	deg.	deg.	In.	
Jan.											
Sun. 25	30.197	31.1	30.8	N.E.	32.9	33.3	32.6	44.8	32.7	—	
Mo. 26	30.314	33.1	32.0	N.N.E.	32.9	31.0	30.1	34.7	13.7	—	
Tu. 27	30.373	32.5	32.0	S.	32.7	30.6	19.3	37.4	13.5	—	
We. 28	30.325	34.7	34.7	S.E.	32.3	28.4	21.2	37.4	15.9	—	
Th. 29	30.304	33.1	32.1	W.S.W.	32.0	26.7	22.5	35.5	21.1	—	
Fri. 30	30.183	32.0	30.3	N.E.	31.1	47.9	23.3	72.9	19.0	—	
Sat. 31	30.339	32.1	30.7	N.N.E.	32.0	36.5	23.0	41.3	22.5	—	
Means.	30.290	33.9	32.8		32.4	34.3	23.5	44.9	19.3		

REMARKS.

25th.—Overcast in morning; fine with little sunshine in afternoon; bright moonlight night.

26th.—Keen frost; clear fine day; slight fog in evening.

27th.—Bitterly cold; thick hoar frost remaining on walls and ground all day; foggy evening.

28th.—Dark foggy morning; bright with sunshine in middle of day; very cold fog in evening.

29th.—Very cold foggy day, clear for a short time about noon; after 5 P.M. the fog in this neighbourhood became almost unprecedentedly dense.

30th.—Fog cleared at 2 A.M., and temperature rose rapidly; bright sunshine for several hours; starlight night.

31st.—Thick white fog throughout the day, sun generally visible through it; dense fog in evening.

An excessively cold week with extremely dense fogs on several occasions, notably on the 29th and 31st. No rain or snow during the week.—G. J. SIMONS.

COVENT GARDEN MARKET.—FEBRUARY 4.

MARKET very quiet. Supply short and irregular; good samples of late Grapes will now be in demand.

FRUIT.

	s.	d.	s.	d.		s.	d.	s.	d.
Apples.....	1	0	0	0	Nectarines	dozen	0	0	0
Apricots.....	dozen	0	0	0	Oranges	dozen	0	0	0
Cherries.....	box	0	0	0	Peaches	dozen	0	0	0
Chestnuts.....	bushel	12	0	0	Pears, kitchen..	dozen	0	0	0
Figs.....	dozen	0	0	0	dessert	dozen	3	0	0
Flowers.....	dozen	0	0	0	Pine Apples	dozen	0	0	0
Grapes.....	dozen	0	0	0	Plums	dozen	0	0	0
Grapes, house ..	dozen	0	0	0	Raspberries	dozen	0	0	0
Lemons.....	dozen	0	0	0	Walnuts	bushel	0	0	0
Melons.....	each	0	0	0	ditto	dozen	0	0	0

VEGETABLES.

	s.	d.	s.	d.		s.	d.	s.	d.
Artichokes.....	dozen	2	0	0	Mushrooms	pottle	1	0	0
Asparagus.....	bunch	10	0	0	Mustard & Cress	bunch	0	0	0
Beans, Kidney ..	dozen	1	0	0	Onions	dozen	0	0	0
Beet, Red.....	dozen	1	0	0	Pickling	quart	0	0	0
Broccoli.....	bunch	0	0	0	Parsley.....	doz. bunches	0	0	0
Brussels Sprouts	dozen	0	0	0	Parsnips	dozen	0	0	0
Cabbage.....	dozen	1	0	0	Peas	quart	0	0	0
Carrots.....	bunch	0	0	0	Potatoes	bushel	4	0	0
Cauliflowers.....	dozen	0	0	0	Kidney	bushel	4	0	0
Cellery.....	bunch	0	0	0	Radishes.....	doz. bunches	1	0	0
Coleworts.....	doz. bunches	2	0	0	Rhubarb	bunch	0	0	0
Cucumbers.....	each	2	0	0	Salsify.....	bunch	1	0	0
Endive.....	dozen	1	0	0	Scorzonera.....	bunch	1	0	0
Fennel.....	bunch	0	0	0	Seakale	basket	2	0	0
Garlic.....	dozen	0	0	0	Shallots	dozen	0	0	0
Herbs.....	bunch	0	0	0	Spinach	bunch	0	0	0
Leeks.....	bunch	0	0	0	Turnips	bunch	0	0	0
					Vegetable Marrows	each	0	0	0

WEEKLY CALENDAR.

Day of Month	Day of Week	FEBRUARY 12—18, 1880.	Average Temperature near London.			Sun Rises.		Sun Sets.		Moon Rises.		Moon Sets.		Moon's Age.		Clock before Sun.		Day of Year.
			Day.	Night.	Mean.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	Days.	m. a.					
12	TH	Royal Society at 8.30 P.M.	44.3	29.6	37.3	7 23	5 6	7 44	8 4	3	14 29	43						
13	F	Quekett Microscopical Club at 8 P.M.	44.3	29.6	36.9	7 31	5 8	7 59	9 19	3	14 28	44						
14	S	Royal Botanic Society at 3.45 P.M.	45.6	30.9	38.3	7 19	5 10	8 16	10 31	4	14 26	45						
15	SUN	QUADRAGESIMA.	47.0	31.3	38.2	7 17	5 12	8 34	11 43	5	14 24	46						
16	M		47.0	30.8	38.8	7 15	5 13	8 55	morn.	6	14 21	47						
17	TU		46.6	30.6	38.6	7 13	5 15	9 20	0 53	7	14 17	48						
18	W	Society of Arts at 8 P.M.	46.3	31.1	38.3	7 11	5 17	9 53	1 58	7	14 15	49						

From observations taken near London during forty-three years, the average day temperature of the week is 45.8°; and its night temperature 30.5°.

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NOTES ON ORCHIDS.—No. 1.

SINCE Orchids have become much cheaper and their cultivation better understood there appears to be more than ever amongst gardeners, and those interested in flowers generally, a strong desire to form a collection, or at least to be in possession of a few useful kinds. It is to these useful kinds that I shall chiefly refer rather than to the choice and rare species that are found in Orchid-growing establishments. The popularity of Orchids for decorative purposes has considerably increased during the past few years, and no one can wonder at this seeing how valuable they are for cutting and for adorning plant houses. The fragrance of many varieties adds to their charms, and the peculiar characteristics of others command attention. Further, few plants retain their flowers in good condition so long as some Orchids do, continuing as they do for six, eight, or ten weeks in conservatories or other structures that have to be decorated with flowering plants. It is, doubtless, on account of this combination of properties possessed by Orchids that we find a few plants in many establishments, not, however, always the most desirable varieties for general usefulness. There are also many admirers and cultivators of flowers who as yet have not attempted the culture of Orchids; therefore only those that are cheap, afford abundance of bloom, and are comparatively easy to grow will be enumerated—such that even an ordinary plant-grower with only moderate accommodation may cultivate successfully. They are old but good, and are additionally useful by flowering during winter and spring, when flowers are particularly cherished.

The first on our list is *Cypripedium insigne*, one of the oldest and most useful, although perhaps not the most beautiful when compared with *C. Lowii*, *C. Stonei*, *C. Parishii*, the charming little *C. niveum*, or the remarkable *C. caudatum*. Yet *C. insigne* is more useful for the decoration of the conservatory than any of those named; it produces its flowers throughout November and December, and they last in good condition for ten weeks. Where choice flowers are required this should be grown in quantity; it is easy to manage, and will flourish under very unfavourable conditions, but under good cultivation its flowers are improved in size and colour. This species will do fairly well under cool treatment, and also in the stove. We do not think, however, that the extreme in either case suits it. It enjoys warmth at a certain season of the year, and is afterwards content with greenhouse treatment. After blooming in the conservatory for some weeks it will be quite at home in a vinery where a temperature of about 50° at night is maintained. The atmosphere suitable to the Vine is also suitable to this *Cypripedium*, and the plants can remain in the vinery if required until growth is completed; they are then kept in a temperature not exceeding 50°, otherwise they may flower too early in the autumn, and before they are wanted.

Cypripediums should be potted as soon as growth has commenced, the pots or pans being well drained, as the

plants require liberal applications of water while growing, and in no stage should they be kept so dry as many Orchids are, not even while at rest. The compost should consist of sphagnum moss, good fibrous peat, charcoal, or broken potsherds, and sand well mixed. Some growers use loam, which we do not like, as it becomes sour too soon. Cow dung in a dry flaked state is also appreciated by *C. insigne*; it should be placed on the top of the mixture after potting, and just before the final mossing on the surface. We do not like the cow dung mixed with the compost for the same reason that we object to loam. It is not necessary to repot every year if the drainage remains good, and the compost such as will not quickly become sour. The cow dung on the surface can be taken off annually and renewed. Should any of the plants at potting time be found in bad health, which is at once perceptible by the yellow sickly appearance of the foliage, the soil has probably become sour. They should then be turned out, and the old compost picked carefully from amongst the roots. If any roots are found clinging to the sides of the pot it is best to break the pot and leave the portions to which the roots are clinging instead of injuring them. This done the roots should be washed in tepid water, and be allowed to thoroughly drain before repotting. When a plant is in an unsatisfactory condition it is not wise to strictly adhere to the compost named, but employ fully three parts of crocks and charcoal until the plant makes fresh roots and attains a healthy vigorous condition. During summer the plants may be grown in a greenhouse, shading them from strong sun, where they may remain until their flower spikes appear. Under this treatment during summer they bloom more profusely than when subjected to heat through the whole year. The flowers remain fresh nearly twice as long in the conservatory, or other house having a temperature of about 48°, as they would in stove heat; they also last a long time in a cut state. The varieties of *C. insigne* vary considerably; some are much finer than others, having half to three-quarters of an inch of white on the dorsal sepal, and beautifully spotted with small purple spots, while other varieties only possess a small margin of white on the upper sepal.

Cypripedium venustum will be found a good companion to the above; its flowers are much smaller, and are useful for cutting. It forms a good succession to *C. insigne*, and the same treatment will suit it well. It is a fine dark-leaved species, purple underneath, and its foliage renders it attractive when not in flower.

Caelogyne cristata is a charming Orchid and popular with all growers. No garden where choice white flowers are in demand through January, February, and March should be without a few plants. The greater portion of the flower is white with a blotch of yellow on the tip. It is not difficult to grow; it is an evergreen plant, and its growth is made after flowering. The flowers last nearly five weeks if not in too much heat and kept free from damp. The plants will succeed on blocks or in pans. When on blocks much more attention is necessary as regards water; therefore we prefer them grown in pans. The compost should consist of chopped sphagnum moss, peat, sand, and plenty of broken potsherds. The drainage must be abundant, the pans being

half filled with crocks, as liberal supplies of water are necessary during the period of growth. This species can be grown well in an ordinary plant stove where the temperature is between 55° and 60° at night, with the usual rise in the day. It enjoys a good rest, and its fleshy pseudobulbs allow of it being kept tolerably dry at the roots, and it is much benefited by being placed in cooler quarters after growth is completed, but should not be in a lower temperature than 45° or 46°. It is necessary while the plant is making its growth to shade from the sun, yet in the declining months of the year after the growth becomes somewhat ripe it should be gradually exposed to more light and a cooler atmosphere. If any plants are unhealthy they should be turned out of their pots, the roots washed, and then placed on blocks with a little moss, and suspended from the roof of a house where a temperature of about 60° is maintained. They will soon make fresh roots, and when sufficiently recruited can again be placed in pans.—**WM. BARDNEY.**

PREPARING SEED POTATOES.

LAST year was generally admitted to be one of the worst for Potatoes ever experienced, and it must naturally follow that the seed for 1890 will be of a very inferior character. Above all things seed Potatoes should be sound. Those who cut a Potato in halves, throwing away the diseased half and planting the other, make a mistake. No one need ever expect good plants or sound produce from contaminated sets. I do not assert that sound seed will ward off disease entirely, but it will in a great measure.

Change of seed I consider of importance, and I am surprised that more attention is not paid to the practice of procuring Potatoes for planting from soil different to that on which the crops are intended to be grown. The soundest and best Potatoes I have seen this winter are those brought from Germany under the name of German Reda. They resemble Redskin Flourballs, and are not only thoroughly sound but of excellent quality. Where sound sets are wanted these are assuredly worth a trial.

I have never had a better or sounder stock of tubers at this season. Since the month of October we have hardly had occasion to pick out a single bad tuber. Varieties that were more than three parts diseased last season were not saved for seed. On taking up the crop all the diseased tubers were removed, and those intended for planting were allowed to dry for a week or two, and were then spread out on the floor of the Apple shed; there they remained all winter, and most of them are there now. During frost they have been covered with dry hay, and as the temperature has never been much above 40° not many of them have sprouted.

Potatoes when allowed to lie in heaps generally produce a heat sufficient to cause growth, and it is not unusual to see a heap of Potatoes completely bound together with long weak blanched stems. Before these can be planted or made ready for planting, every growth must be broken off. This is very injurious, and we have no more right to expect full crops of Potatoes when that malpractice is adopted than to expect good crops of Grapes if the first growths were rubbed off the Vines, and weaker second growths were relied on for producing the crop.

The best way to prevent Potatoes from sprouting is to keep them spread out thinly, not more than 4 inches deep, in a rather cool but frost-proof place, taking every opportunity of exposing them to light and air; in fact, seed Potatoes should never be covered up unless to protect them from frost. Moisture, too, must be expelled from them as much as possible, as this, as well as heat and darkness, is conducive to premature growth and disease.

Supposing the Potatoes intended for planting this spring were stored carefully in November and care was taken to prevent them from sprouting or becoming diseased, they will begin to grow naturally now, especially the early varieties; and whenever this is observed they should be carefully examined, removing any diseased tubers, the others being placed where they will be fully exposed to light, sun, and air. We spread our seed tubers out at this time one layer deep on the inside border of a cool Peach house. They are placed as closely as they can be packed on the soil, and a small quantity of leaf soil is strewn over them. There they start gradually into growth, and the shoots formed are short, stubby, and dark green in colour. No blanks occur in the Potato rows when the sets are prepared in this manner, and better and earlier crops

are produced than when no such care is exercised. No doubt many who grow Potatoes have no glass house to start their seed in, but any ordinary frame rendered frostproof, with a little soil in it, will serve the same purpose. Even light shade will do, or a sheltered place enclosed with boards and securely covered in frosty weather will answer; indeed anything is better than allowing the tubers to make tender white sprouts in the dark.

Some growers make a practice of saving all the smaller tubers for seed and planting them whole, which is a very good practice, but others who may not have enough of such seed, or wish to make the most of some scarce variety, cut one tuber into two or three sets; but the general time of cutting the tubers—viz., just before planting, is not by any means the best time. In my opinion all sets should be cut a month or more before planting time. The cut surface has then time to heal, whereas when the cut is fresh decay often commences immediately the set is placed in the ground. It is well known that a soft decaying Potato amongst a heap of sound tubers will quickly affect those in contact with it, and I do not see why the same result should not ensue in the case of those planted out. Hence the reason for planting whole tubers or those which have been cut long enough to allow the cut part to be toughened over.

Potatoes sprouted in the manner I have indicated produce strong shoots, which may not be more than an inch long at planting time, and much care should be taken not to break any of these shoots off, or the benefit of all previous attention will be lost.—**A KITCHEN GARDENER.**

TEA ROSE CULTURE IN AMERICA.

I WAS greatly interested in reading the able article on Tea Rose cultivation by Mr. Bardney on page 479, December 25th, 1879, and it occurred to me that a brief sketch of the results of growing Tea Roses here for winter decoration might be of interest to your readers. It has always seemed to me that the true way to test a system of cultivation is to give the practical results. The mode of culture practised here is very simple. Propagate in January or February, shift along as fast as the plants require it, and by the 1st of August they are in 10-inch pots, in which they are flowered. During the summer we pick off the flower buds as fast as they are formed until the 1st of August, when the removal of the buds ceases, and about the 1st of October the plants are in excellent condition for winter work.

The Rose house here is 29 feet long by 18 feet wide, and we place in it about 250 plants. I give you a season's record of Rose cutting during the winter of 1878-9:—In October we cut 976 blooms, November 759, December 736, January 840, February 963, March 1305, April 1890, May 2639—total 10,108.

Tea Roses here are seldom budded or grafted, Niphetos being an exception. It certainly does better budded on some vigorous stock. The varieties grown are Adam, Homère, Cels Bon Silene, Niphetos, Safrano, Isabella Sprunt, La Sylphide (Madame Russell or Duchesse de Brabant), Cornelia Cook, Catherine Mermet, and a few Bourbons. I shall be glad to hear through your Journal results from those who cultivate the Tea Rose for affording winter flowers in England.—**NORMAN AMERICAN GARDENER, Vermont.**

OLD VINES AT MELTON CONSTABLE.

FAIR samples of Black Hamburgs and Muscat Grapes have been sent you which were cut from the old Vines here, all grown in the same house and with precisely the same treatment. There is an inside border only, and the width of border is 9 feet 6 inches, the length being 40 feet. The number of Vines planted are nine, but the number of rods are eighteen, and the average length of rods 18 feet. These Vines, although planted between fifty and sixty years ago, are in excellent health, and have this season carried a splendid crop of Grapes—about five hundred bunches, the average weight per bunch being from half a pound to 2½ lbs. Four years ago this spring I completely renewed the border and laid out the roots of the Vines very carefully into a mixture of maiden loam, bones, soot, wood ashes, and charcoal. For the three last named ingredients I am a great advocate, and I am of opinion that they are used too sparingly in most gardens. The new soil produced an astonishing improvement in the Vines, thus showing that age is no detriment to Vines but rather the reverse, for besides the heavy crops the leaves are as large as plates and of a very dark green hue, which in itself denotes

health. It may be mentioned as regards their keeping qualities that I sent in my last dish for dessert on January 31st, and they were then as fresh and plump as possible. The bunches were cut from the Vines in September, placed in a Grape-room, the stems being in bottles of water with a little charcoal.—J. CLARKE, *Melton Constable*.

[The Black Hamburg Grapes received were large in berry, well finished, and of superior quality; the Muscats were very large, amongst the finest berries we have seen this year, and were good in quality, but not perfectly ripe in consequence of the cold and dull season.—Eds.]

AGAPANTHUS UMBELLATUS IN WINTER.

THE visitor to large well-kept gardens with their array of forcing and other houses invariably sees something to admire and occasionally to evoke surprise. One of these surprises occurred to me the other day on visiting the beautiful gardens at Wroxall Abbey near Warwick, the seat of Mrs. Dugdale. In the large conservatory, arranged with great taste, among the usual winter-flowering plants were some fine specimens of *Agapanthus umbellatus* in full flower. Rarely have I seen the plant in better condition, nor the flowers of such an intense blue. Standing out among the many other well-grown plants around, they seemed to subdue the dazzling colour of the Poinsettias, to tone down the yellow of Genistas and Coronillas, and blend the whole harmoniously together, producing an effect rarely seen in the dull days of early January. Mr. Osman, the able head gardener there, informed me that these plants were placed out in their usual quarters in pairs in the approaches to terraces and in various parts of the pleasure grounds, but owing to the late season of 1879 they did not produce their flower spikes until late in the autumn. I thought as I admired the effect the plants produced that it might be possible by retarding the growth to make their flowering at this season a rule rather than the exception. A grand addition it most certainly is to the list of winter-flowering plants.

To the lover of horticulture these fine gardens would at all times be well worth a visit, but in a hasty survey it is scarcely possible to note all that deserves attention. The vineries there, however, deserve especial notice. In a range containing early and late Vines the latter were truly magnificent from the large crop of noble bunches they bore. The varieties were Muscat of Alexandria, very fine, large well-shouldered bunches with splendid berries, the bunches ranging from 4 to 6 lbs. each; Mrs. Pince, grand, but not coloured well; Black Alicante, grand bunches averaging 7 lbs. each; Gros Colman, with enormous berries; and Lady Downe's Seedling, very fine. The Vines afforded abundant evidence of Mr. Osman's skill as a Grape-grower.—VISITOR.

ROYAL HORTICULTURAL SOCIETY.

FEBRUARY 10TH.

THE Council-room on the occasion of this meeting was rendered bright and attractive by several groups of plants, those from Messrs. Veitch, Bull, Osborn, and Cannell being the most noticeable. Many other plants of considerable interest individually were also exhibited. The fruit also, notably Mr. Killick's collection of Apples and old and new Grapes from Trentham, attracted considerable attention.

FRUIT COMMITTEE.—Henry Webb, Esq., in the chair. Mr. Stevens of Trentham exhibited two dishes of Black Hamburg Grapes, one old and the other new, and also a bunch of Madresfield Court. To preserve old Black Hamburgs till this season is a very unusual occurrence, and the Committee expressed a high opinion of Mr. Stevens's skill. The new were of excellent flavour, good colour, and remarkably well grown. The old were quite plump and richly flavoured. A cultural commendation was awarded. Messrs. Brown of Stamford sent a dish of Apples called Beauty of Barnack, a conical striped Apple of ordinary quality. Another from the same source was Wharfedale Beauty, somewhat in the style of Golden Reinette. It came up as a chance seedling in a nursery at Oakham, and though superior to the other was not in such condition as to enable the Committee to give a high character to it, and a wish was expressed to see it again next year, when the season may be more favourable for the development of its merits. Mr. John Lane, The Gardens, Oakley Park, Epsom, sent a dish of Vick's Criterion Tomato, but the fruit had been kept too long. Mr. H. A. Mann, The Gardens, St. Vincent's, Grantham, sent a box of fifteen fine large Mushrooms of very fine quality, to which a cultural commendation was awarded. Mr. Lewis Killick of Langley, near Maidstone, sent a fine collection of sixty varieties of Apples in very excellent condition, and a silver Knightian medal was awarded.

FLORAL COMMITTEE.—Mr. Charles Noble in the chair. Messrs. Veitch & Sons exhibited a group of dwarf, vigorous, and well-flowered Cyclamens, and several choice Orchids and other plants. *Dendrobium splendens*, the result of a cross between *D. heterocarpum* and *D. macrophyllum*, was awarded a first-class certificate. The flowers are of medium size, with white sepals and petals and small labellums of an extremely rich purple tinge in the centre. *D. Domini*, the result of a cross between *D. nobile* and *D. heterocarpum*, was also pretty. A first-class certificate was granted to the pretty and fragrant *Daphne Blagayana*; the flowers are borne in close heads, and the only disadvantage is the somewhat loose habit of the plant. A vote of thanks was awarded for the group. A first-class certificate was also awarded for *Nepenthes bicalcarata*, a species from Borneo with large dull red pitchers.

Mr. W. Bull staged a group of Orchids and Palms, including the extremely delicately tinted *Cattleya Trianae* Vesta, the bright little *Sophranites grandiflora*, *Cymbidium Lowianum*, *Odontoglossum Rosal majus*, *Ada aurantiaca*, and *Odontoglossum chrysosum*. *Dendrobium luteolum* was also included, a pretty species with small pale yellow flowers. The award of a bronze medal was recommended by the Committee for these plants.

Mr. H. Cannell, Swanley, Kent, exhibited a group of white Primulas in 5-inch pots. Some of the plants were more than 18 inches in diameter. All were extremely luxuriant, each plant bearing a number of umbels. He also exhibited cut flowers of twenty distinct varieties of Primula, some of which were very rich and clear in colour. They were stated to have been grown with Cannell's Invigorator or food for plants. A vote of thanks was awarded. A peculiar little Primula was also shown, stated to be a hybrid between the English and the Chinese Primroses; the flowers were small, and chiefly resembled the Chinese form. Mr. Chambers, Westlake Nursery, Spring Grove, Isleworth, was awarded a vote of thanks for a good specimen of *Coslogyne cristata* bearing about fifteen spikes, each with four or five flowers.

Messrs. Osborn & Son, Fulham, staged a group of plants, comprising Lilies of the Valley, *Azalea amena*, Lilies, *Polygonatum*, and various Palms, chiefly *Cocos Weddelliana*. A vote of thanks was awarded. Mr. C. Green, gardener to Sir G. Macleay, Pendell Court, Blotchingley, received a vote of thanks for *Salvia albosulcata*, the upper lip of the flower being yellowish white and the lower deep blue, and for *Oenothera Webbiana*, a species from the Canary Islands. The outer florets of the heads were narrow, spreading, and bright purple. A similar award was accorded to Mr. Hudson, gardener to H. G. Atkinson, Esq., Gunnersbury House, Acton, for cut blooms of *Maranta Warcewiczii*. Mr. E. Wilson, gardener to T. Farmer Hall, Esq., Effingham House, New Leatherhead, also received a vote of thanks for a fine specimen of *Dendrobium chrysotoxum* bearing five racemes of its beautiful yellow flowers. Mr. Rann, gardener, Handcross Park, Crawley, sent a large male cone of *Euphorbia villosa* about 2½ feet long, also a flower spike of *Dasyliroium glaucum*. Mr. J. Stevens, The Gardens, Trentham, exhibited a remarkably handsome specimen of *Lælia anceps* bearing ten long racemes, each having four or five large and richly coloured flowers near the apex of the peduncle. A cultural commendation was most deservedly awarded for the plant. The variety of *Cyclamen Rosy Morn*, for which a certificate was awarded to Mr. H. B. Smith, Ealing Dean Nursery, last year, was again exhibited in good condition, and the certificate was confirmed.

SUNNY ANTICIPATIONS.

ABOUT this time last year I sent you a short article entitled "Sunny Memories." It would not be possible to repeat that strain now, for the year that has past has been a cloudy one in every sense; my garden banks were not sunny, and my other bank had broken just before. Yet it would hardly do to change the title to "Cloudy Memories;" let it rather be "Sunny Anticipations," for with others of your correspondents I do look forward to a fine year in matters horticultural, as things are certainly beginning to look up in the great world outside our garden walls. 'Tis old Horace that wrote, "The same great God that brings on the horrid times will remove them."

During the season I visited some twelve or fourteen "places," but the gardeners all told the same story—the old plants did not show up at all well, while the new had no chance of fair trial. One memory I have is that of a small garden—a Rose bank close to a Cumberland lake. 'Twas late in autumn; the tourists had left, the hotels were about shutting up their great rooms for the winter; but the weather was the finest that 1879 afforded us, and it was just the time to visit those rugged fells and wooded valleys. After all, O "WYLL SAVAGE," "there is a pleasure in the pathless woods," as Byron tells us. This small garden had behind it an impenetrable grove, and a strip of flat ground close to the water contained a couple of cottages, which could be approached only by a boat. There the Roses were in full second crop, doing the best I ever saw to deserve the title of Hybrid Perpetual. How

half filled with crocks, as liberty during the period of growth in an ordinary plant stove between 55° and 60° at night, with enjoys a good rest, and being kept tolerably by being placed in but should not be. It is necessary when from the sun, yet growth becomes to more light as healthy they washed, and suspended for about 60° is and when W.M. BARRY

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JOURNAL OF HORTICULTURE AND COTTAGE GARDENING.

Planted in October and plunged under ashes with the Hyacinths. They are now fresh and lovely—far fresher, of course, than crocuses, and as arranged with half-hardy Ferns, and Crocuses, and Hyacinths, Tulips, and Crocuses of various kinds and colours they fill a void, for when Linum catharticum is over yellow-flowered plants are not common—DUNDEEN.

LABELS FOR ROSES AND FRUIT TREES.

I CAN strongly recommend pottery labels softened with white paint, just a trifle of turpentine rubbed on the label and written while moist with a very hard pencil (H.H.). I find them never perish or decay, and if wired on to the wires of the trainers they will last a long time. In old days my father, who had a great collection of Pears (some seventy sorts) in Nottingham, used always to have thin strips of lead punched with the letters, and then for bush fruit or standards wrapped round a branch. These are quite indelible and cheap, and the same plan may be adopted for Roses. In case of dwarfs I use small round pottery labels affixed to twisted galvanised wire inserted in the soil. This plan does equally well for alpine plants. Parchment when written on with printers' ink makes very good labels.

Relative to frost injuring Roses Mr. Boyes tells us that "facts are stubborn things," so are men sometimes, or they would admit the fact that young Rose stems do not suffer from frost so much as old branches do, nor is there such a plant as a really hardy Rose.—C. P. P.

ROYAL HORTICULTURAL SOCIETY,

FEBRUARY 10TH.

THE Annual General Meeting of the Society was held on Tuesday last, the President, Lord Aberdare, in the chair. The following members of the Council were present:—Sir T. Lawrence, Bart., Col. R. Trevor Clarke, Dr. Denny, Sir Charles W. Strickland, Bart., Major F. Mason, Dr. Hogg (Secretary), and Henry Webb, Esq. (Treasurer).

Mr. S. JENNINGS, the Assistant-Secretary, read a list of names of ladies and gentlemen who were desirous of becoming Fellows of the Society, and the Chairman moved that they be elected. The minutes of the last General Meeting were then read and formally confirmed. The election of Scrutineers having been proposed, Mr. John Lee and Mr. West were duly appointed.

The PRESIDENT next proposed that the Report of the Council be taken as read, which was unanimously agreed to. He then proceeded to make a few remarks upon the position of the Society. He regretted that it was not in his power to lay before the Fellows more definite information, but as litigation had been commenced, the results of which were at present very uncertain, he did not feel justified in saying much concerning the matter. He reminded the Meeting, however, that it was the duty of the Society in the interest of the debenture holders to retain possession of the Garden as long as they could do so legally. Although it was difficult to state anything with certainty in reference to a Chancery suit, he believed it probable that a decision would be obtained during the month, after which the future course of the Society could be discussed to much better advantage. The past year had been a most disastrous one for horticulturists, and although the Council had made unusual efforts to render the shows and meetings as attractive and complete as possible, thus increasing the expenditure, yet the receipts were lower than the previous year. Thus, while the Society started in the year without any serious additional incumbrances it became necessary for them to be as economical as possible. Notwithstanding the unfavourable weather on each occasion the conversazioni and fêtes proved successful, for a balance of £60 remained after paying all expenses. The receipts for the garden produce reached a very high figure during the past year—viz., £684 18s. 11d., a sum greatly in advance of that received in the previous year. As a set-off against this he referred to loss occasioned by the hailstorm, which necessitated the outlay of £140 to repair the damage, the falling of a boiler at Kensington also increased the expenses by £120. He then briefly remarked, that even though the decision in the Chancery suit should be against the Society they might still retain a portion of the Kensington Gardens, for he believed the Commissioners were disposed to be friendly. He concluded, hoping that at the next General Meeting the affairs of the Society will be in a more settled and satisfactory condition.

Mr. GUBBELLA thought the Fellows were indebted to the Council for so courageously "sticking to a sinking ship," and strongly condemned the course taken by the Commissioners.

The result of the ballot was then declared, the following gentlemen being elected to the Council:—W. Houghton, Esq.; Sir Henry Scudamore Stanhope, Bart.; and the Rev. H. Harpur Crewe, in place of the three retiring members.

Mr. KELLOCK inquired whether the Editor of the Society's

HEATING APPARATUS.

THE question being often asked in the columns of your Journal as to a good boiler for heating purposes, for the benefit of those inquiring I will give my experience of a boiler I have had in use during the present and last most severe winters. The greenhouse I have is 19 feet 6 inches by 11 feet 6 inches inside clear, three-quarter span, glazed without putty—(very cold, but the most healthy of all glazing for plants, especially for bloom, there being never any drip or excessive moisture)—and is heated with one of Thomas Read's slow-combustion boilers and is attached to 100 feet of 3-inch piping. During the whole of the month of January, when the frost has been the most severe that I ever remember, I have made up my fire and left at 6.30 P.M., being out at night work, and no one has been near it till 7.30 A.M., thus thirteen hours without any attention whatever, and not on any occasion have I found the temperature below 45°. The damper is so easily arranged that I could easily keep it up to 50° if required. The apparatus will hold sufficient fuel for eighteen hours in the hardest weather; in mild weather I feed once only in the twenty-four hours. The fuel is a mixture of hard coal and cinders in equal parts. In mild weather cinders are strong enough. In this house I have had Cyclamens, Primulas, and Geraniums in full bloom all the winter.—AMATEUR FLORIST.

DAFFODILS IN POTS.—Our first glimpse of "the green and gold of Daffodils" was obtained on February 3rd, when some pots in the greenhouse opened their flowers. Our bulbs were

Journal really received a separate salary of £100, or whether that formed part of his salary as Assistant Secretary.

LORD ABERDARE replied that it formed part of Mr. Jennings' regular salary.

Mr. LIEGINS moved a vote of thanks to the Council for undertaking to protect the interests of the Society by defending a suit in Chancery, which was seconded and carried unanimously.

A unanimous vote of thanks to Lord Aberdare brought the proceedings to a close.

REPORT OF THE COUNCIL TO THE ANNUAL GENERAL MEETING OF 10TH FEBRUARY, 1890.

THE Council have to report to the Fellows a continuance of interest in the operations of the Society during the past year.

Notwithstanding the unfavourable weather which prevailed throughout the whole of last year, and which marred the success of the exhibitions and meetings generally, the receipts on account of these have not fallen greatly short of those of the previous year.

The fortnightly meetings have been liberally supported—groups of an interesting nature, and valuable collections of fruit, vegetables, and plants have contributed to sustain their high character; and the Council take this opportunity of acknowledging the valuable services rendered by the Scientific, Fruit, and Floral Committees, whose proceedings have been fully recorded in the Journal of the Society.

The Great Show of 27th May was equal to any former Exhibition as regards merit and extent, and was honoured by the presence of H.R.H. the Princesses of Wales, and T.R.H. the Duke and Duchess of Edinburgh, the Crown Princes of Denmark and Sweden, the Count and Countess of Flanders, and the Duke of Teck.

The Popular Show upon Whit-Monday was an improvement upon that of the previous year, the Covent Garden growers filling the grand marquee with a brilliant display of the flowering plants which are specially grown for the supply of the London markets, and, in spite of the heavy rain, the number of visitors on this occasion was 8071.

The Council are desirous of fostering a love of horticulture amongst the humbler classes; and deeming this one of the objects to be kept in view by the Society, they have resolved to hold a show upon Whit-Monday, the 17th May next, and to postpone the competition for the cottagers' and artisans' prizes to the Bank Holiday, 2nd August.

In compliance with a desire expressed by the Fellows, the Council held a conversation on the evening of Wednesday, 28th May, which, in spite of the weather, was numerously attended. The tents of the Great Show and the conservatory were illuminated by different systems of electrical lighting, and the members of the Quekett Microscopical Club were present with their microscopes. The success of this conversation encouraged the Council to hold an evening fête on the 9th July, the principal features of which were the exhibition of recent scientific inventions, including Edison's loud-speaking telephone, the phonograph, microscopes, with various other attractions. The gardens were brilliantly illuminated by electricity, and the attendance was very large.

Her Majesty's Commissioners for the Exhibition of 1881 having commenced legal proceedings in order to obtain immediate possession of the Gardens, the Council were advised that they were bound to use every legal means of defending the interests of the debenture holders, whose sole security for the payment of the interest on their bonds, as well as for the portion of the capital for which the property of the Commissioners was conditionally liable, would have disappeared with the termination of the lease to the Society. These proceedings are still pending. The Council cannot refrain from expressing their deep regret that the terms offered by the Commissioners some three years ago were declined by the debenture holders, a refusal which not only involved the loss of an opportunity of obtaining repayment of a portion of their capital which might not easily recur, but has compelled the Society to embark in a litigation which they would gladly have avoided could they have done so with justice to the debenture holders and with security to themselves. The Council have reason to believe that juster views of their position now prevail among the debenture holders, and that if a similar offer were repeated it would be accepted by them. Such a course would be hailed by the Council with the greatest satisfaction. They cannot but think that, whatever may be the legal rights of the debenture holders strictly construed, their moral claim for consideration and even generous treatment by the Commissioners, on whose property their money was expended for objects warmly fostered by them and their late illustrious President, is very strong; while the amicable settlement of the question would greatly promote favourable arrangements by the Society with the Commissioners for the use of the Gardens, or such portion of them, and of the adjoining premises, as would not be required for public purposes.

The fifth volume of the Journal has been completed during the past year. Amongst the papers may be mentioned Notes by Dr. Masters, F.R.S., on "Root Hairs and Root Growth," and a treatise "On the Genus Tulipa," by H. J. Elwes, Esq. The reports of Chiswick trials have included Endives, Cabbages, double-flowered Ivy-leaved Pelargoniums, Abutilons, and Gloxinias.

The desire expressed by the Council in their last annual report, that correspondence should be opened with foreign and colonial horticulturists, has been gratified by the receipt of bulbs from Dr. Regel of St. Petersburg, of many interesting Caucasian and Central Asian plants, and seeds from various contributors at the Cape, in America, Australia, and Van Dieman's Land, seedlings from many of which will shortly be available for distribution amongst the Fellows.

The trials by the Fruit and Floral Committees at Chiswick have been continued as usual, but owing to the unfavourable season the results have not been so satisfactory as might have been desired, especially of those carried on in the open air. A complete trial of all the varieties of summer Radishes has been made, numbering 180 samples, a full report of which will be published in the Society's Journal.

The Society now possesses a fine collection of Tuberous Begonias, many of which are hybrids raised in the Gardens by Mr. Barron, who has also been most successful in raising several new and handsome varieties of the Chinese Primrose.

The violent hailstorm of August last broke upwards of one thousand panes of glass, while other necessary repairs at Chiswick have occasioned extra expenditure. The land on the west of the Gardens having been sold and a new road made alongside, it was found necessary to erect a new boundary wall. The cost has been defrayed by His Grace the Duke of Devonshire, on the understanding that one moiety shall remain as a loan to the Society at 5 per cent. interest. The expenses of the Gardens have been reduced to a minimum, while their efficiency has been maintained under the superintendence of Mr. Barron.

One of the large boilers which heats the conservatory at South Kensington, and had been worked for many years, failed during the last winter; this caused with firing an outlay of about £100.

Owing to the excessive and continuous rainfall during the past season, and the unusually low temperature which prevailed, the out-of-doors fruit crop has been very poor. Strawberries were most abundant, but literally rotted on the ground.

The crop of Grapes in the large conservatory was exceptionally good, realising about £400.

The young Vines planted on the long glazed wall have grown very strong and promise well.

A large number of plants growing in the rockery were killed by the severe frost of last winter, but most of them have been liberally replaced by Mr. Ware of Tottenham, and others; but the damage done by the frost of the present winter may prove far more serious.

A list of the donors of plants, &c., is annexed to this report. The cordial thanks of the Council are tendered to them for their much-appreciated contributions.

Great attention has been paid during the past year to the distribution of plants and seeds amongst the Fellows of the Society. The number of plants distributed has amounted to 10,250; cuttings of plants, fruit trees, and Strawberry runners, 2,800 bundles; packets of seeds 44,780, being double the amount of the previous year.

The Council regret that owing to the great scarcity of all kinds of seeds, caused by the wet and cold of the past autumn, the distribution during the coming season must necessarily be limited; but a very large stock of plants is being prepared, particulars of which, with form of application, will be furnished in the next number of the Society's Journal.

A new railway station on the Metropolitan and District Railway has recently been opened at Acton Green, within four minutes' walk of the Garden. Trains run every half-hour. The entrance to the Garden is now removed to Sutton Court Road, adjoining the Vestry Hall, Turnham Green.

The Council are glad to observe the continued success of the numerous floricultural societies which have been established in various parts of the kingdom, many of which have associated themselves with the Society, and report that of all the prizes offered by them the Society's silver and bronze medals appear to be most appreciated.

The Council also note with satisfaction the progress which is being effected by associations which have taken various branches of floriculture under their special care, such as the "Rose," the "Pelargonium," the "Auricle," and the "Carnation" Societies, and some others. They will be glad to co-operate with such societies, and afford them all facilities for holding their various exhibitions in conjunction with the ordinary meetings of the Society.

During the past year 238 free monthly tickets have been issued to students in the science and art schools, with permission to sketch in the Gardens and conservatory.

The Society has lost during the past year forty-seven Fellows by death and ninety-two by resignation. 149 new Fellows have been elected during the year.

The roll of Fellows now consists of—

837	Life Fellows.
430	Fellows paying £4 4s. annually.
772	" " £3 2s. "

BALANCE SHEET, 31ST DECEMBER, 1879.

Dr.	£	s.	d.
To Sundry Creditors on open Account	1,402	17	8
Life Composition Account	4,000	0	0
Additional Debenture (C. J. Frazer)	90	0	0
Legacy received from the late Miss Farry	840	18	8
General Revenue Account—Balance carried forward	27,825	8	2
Cr.	£	s.	d.
By Capital	7,141	13	2
Annual Subscriptions—Outstanding	345	9	0
Sundry Debtors—Garden Produce	116	14	6
On Open Account	68	18	11
Investment—8 per cent. Consols—£100 (Legacy Invested) ..	182	18	8
Cash at Bankers	85	2	6
Petty Cash in Hand	1	5	1
	70	5	1
	27,825	8	2

We have examined the above Accounts with the Books and Vouchers, and find the same correct.

JOHN LEE,
JAS. F. WEST,
R. A. ASPINALL, } Auditors.

January 22nd, 1880.

SAMUEL JENNINGS, Assistant Secretary.

ANNUAL REVENUE ACCOUNT FOR THE YEAR ENDED 31ST DEC., 1879.

To Establishment Expenses—	£	s.	d.	£	s.	d.
Salaries	854	1	2			
Wages	236	12	10			
Printing, Stationery, and Cards	210	14	5			
Postages	52	18	10			
Gas	22	5	9			
Miscellaneous	75	2	5			
				1,753	18	8
Special Expenses in relation to Horticulture—						
Journal	150	15	9			
Fruit and Floral Committees	72	2	4			
Editor of the Journal	100	0	0			
Plant and Seed distribution	128	12	4			
Grants in aid	30	0	0			
				479	11	5
Ornamental Garden Expenses—						
Rent, Rates, Taxes, and Insurance	267	11	6			
Labour	967	9	8			
Implement, Manure, &c.	159	16	4			
Coal and Coke	177	9	10			
Repairs	220	17	4			
Trees, Plants, Seeds, &c.	25	4	1			
Superintendent's Salary	150	0	0			
Water	9	10	8			
Miscellaneous	100	17	1			
				2,088	16	1
Ornamental Garden Expenses—						
Rates, Taxes, and Insurance	491	4	5			
Superintendent's Salary	100	0	0			
Labour	422	2	2			
Repairs	162	18	7			
Coal and Coke	75	14	5			
Implement and Manure	15	1	1			
Water	9	18	5			
Reading Room	22	9	11			
Bands	157	4	4			
Trees and Plants	7	18	0			
Miscellaneous	88	17	8			
				1,516	5	2
Conversations and Evening Fête				548	15	6
Exhibitions—						
Advertising	269	14	4			
Prizes and Medals	925	7	0			
Bands	82	12	0			
Superintendent of Flower Shows	25	0	0			
Labour	96	19	8			
Judges' Fees	16	16	0			
Sundries	183	11	2			
				1,611	1	2
Balance to General Revenue Account				372	8	2
				27,520	8	0

INCOME.

By One-fifteenth Life Compositions as at 1st January	£	s.	d.
Annual Subscriptions	2,852	9	0
Exhibitions	1,012	8	8
Proseminaries	26	8	0
Conversations and Evening Fête	417	18	5
Daily Admissions	309	14	0
Garden Produce	634	18	11
Packing Charges	24	15	0
Miscellaneous Receipts	103	5	2
"Davis Bequest."—Interest appropriated under provisions of Trust towards Prize Medals	60	17	6
Bank Deposit Account—Amount Withdrawn	240	0	0
Interest on ditto	4	8	2
	27,520	8	0

We have examined the above Revenue Account with the Books and Vouchers, and find the same correct.

R. A. ASPINALL,
JOHN LEE,
JAS. F. WEST, } Auditors.

January 22nd, 1880.

GENERAL REVENUE ACCOUNT, 31ST DECEMBER, 1879.

Dr.	£	s.	d.
To Amount Withdrawn from Deposit and Transferred to Annual Revenue	260	0	0
Allowances made on Garden Sales on 1878 Account	1	1	2
Balance carried forward as per Balance Sheet	260	18	8
	511	19	10
Cr.	£	s.	d.
By Balance of Revenue Account brought forward 1st January, 1879	850	16	7
Annual Revenue Account—Balance for the year 1879	323	2	2
	1,173	18	9

By Balance carried forward

We have examined the above Account with the Books and Vouchers, and find the same correct.

R. A. ASPINALL,
JOHN LEE,
JAS. F. WEST, } Auditors.

SAMUEL JENNINGS,
Assistant Secretary.

January 22nd, 1880.

SUMMER AND EARLY AUTUMN PEARS.

OUR earliest Pear is Doyenné d'Été, growing on an espalier in a warm sheltered position. In favourable seasons it generally ripens during the third week in July, and is always good. We find it necessary to be careful in gathering the fruit before it is fully ripe, otherwise it is useless. This remark also applies to all early Pears. The next to ripen is Citron des Carmes, also on an espalier; this ripens in about a week or ten days after the former, but is seldom really good. We intend to cut the tree back and re-graft with some good late variety. Jargonelle is the next in succession. We have it both on south and east aspects of walls, the fruit ripening in the order named. Those from the east aspect are nearly always the finest flavoured. Williams' Bon Chrétien comes into use next. This variety does remarkably well hereabouts both as standards and espaliers. There is a large standard tree growing in an old cottage garden not far from us that sometimes produces 30 stones of fruit. I have known that quantity gathered from it twice in the last seven years. Were I about to plant two acres of ground with Pear trees for market purposes I should plant one and three-quarters of an acre with Williams' Bon Chrétien, and the rest with a selection of other varieties. I feel sure that in time the former would be a good investment. Autumn Bergamot comes next from an espalier in a very warm position, but neither this variety nor its near relation Gansel's Bergamot are ever really good with us. They are both invariably gritty at the core. Louise Bonne of Jersey comes next, and is good both on espaliers and from a tree growing on a west wall, the fruit forming a good succession. This variety is followed by Marie Louise. Our finest fruit of this fine Pear are always gathered from trees on a south wall, but the trees are growing on the north side of a wall and have been horizontally trained, from the uppermost branch of which we have led off some shoots and trained them vertically down the south wall. From a space about 20 yards long by 1½ yard in width we have sometimes picked 25 stones of fine fruit; in fact, in good seasons the fruit hangs literally like ropes of Onions. All early Pears were from three weeks to a month later in ripening during the late autumn than is usual. Our soil is a stiff loam resting on magnesian limestone. Fruit trees grow very well in it generally.—H. J. CLAYTON, *Grimston Park Gardens, Tadcaster.*

OF the four varieties of September Pears that have been recently figured and described in the Journal I shall from experience give the palm to Beurré d'Amanlis. Fondante de Cuerné I do not know, and of Fondante d'Automne I have not had sufficient experience to say under what conditions and in what localities it will succeed. Beurré d'Amanlis is a fine Pear, and it appears to succeed generally. In this neighbourhood it thrives well; at Croxteth Hall on the walls it is quite at home. My trees here are young, on the Quince stock, grown as pyramids. Soil light, resting on a red sandstone formation. In spite of the bad season this year the fruit were by far the largest of any in the garden. I have seen this Pear succeed a few miles from Hexham-on-Tyne on the Quince as pyramids at an elevation of 550 feet above the sea; soil light, white sandstone formation; and near Boston in Lincolnshire it flourishes and fruits abundantly on strong hazel loam. Again, in the same county at Donington I have seen it flourish on the Quince as pyramids, soil only about 1 foot deep with hard clay

beneath; and in winter I have seen when digging amongst the trees water following the spade.—W. BARNES.

In reading the very interesting paper on early Autumn Ferns in the Journal of January 23rd I was surprised to see Bourd d'Amanlis spoken of as "one of the very best Ferns." Here (Best Riding of Yorkshire) I can speak of it as most handsome in appearance, of enormous size, inconveniently juicy, but insipid and watery, which exactly answers to a description of its condition in France. I have it as a standard on a Pear stock, and had been in the habit of giving a good dressing of manure to the roots every winter. About four years ago I omitted this dressing, and the following season the Ferns were about half their usual size. I began to think my management was in fault, but when they were ripe to my great astonishment I found the flavour excellent and the juice not too abundant. Since then from the very unfavourable springs I have had no fruit, but now look hopefully forward after reading the article referred to, feeling that my mistake has been in treating it too well.—AMATEUR, *Yorkshire*.

FERNS, HOW ARE THEY REPRODUCED?

In my former paper I promised to give not only my own opinion, but also the opinions of others, as to how our abnormal varieties of Ferns are produced. I will first quote the opinion of E. J. Lowe, Esq., as given in his work on British Ferns and their varieties. Mr. Lowe writes as follows (vol. i., page 26)—"Some varieties are more permanent than others, and seedling plants from well-marked fronds will be more permanent in character than divisions of the rhizome, although by this means other varieties will frequently appear. Nevertheless this is an advantage, inasmuch as there is a great probability of something more remarkable being found amongst the batch of seedlings, whilst at the same time there will be many resembling the frond from which the spores had been gathered." Further, at page 58, where referring to the many beautiful varieties of Polypodiaceae—"What other varieties a few years hence may bring to light it is impossible to say; when Nature puts on these sports there seems to be no limit." And in another place Mr. Lowe remarks, "It is with the greatest difficulty that anything special can be obtained from the common type; but when a special variety is obtained there is a fair chance of other good varieties being produced from the new variety, and especially if spores be sown from the best and most distinct fronds."

I will now refer to another gentleman whose opinions I think are worthy of our consideration. He has had more than forty years' experience in raising and cultivating Ferns. I allude to Mr. Clapham of Scarborough, a gentleman who has raised and sent out some of the best Ferns that are now found in British ferneries. It is his opinion that no fertilising or cross-fertilising takes place in Ferns, which confirms my view. He referred me to a friend who held a contrary opinion, and requested me to introduce the subject to him. This I did, but with very poor results; for when I asked him what he thought about Ferns being fertilised or cross-fertilised, he only replied that he had some time before two plants of *Athyrium*, and that by mixing the spores taken from each plant and sowing them he had raised many plants which in some respects were distinct from either of the two plants from which he had taken the spores, but added he sold the plants and had not been successful in raising anything distinct since. I thought then that his theory was very unsatisfactory. I think that I shall be able to show that it is worthless.

I will now give the substance of a conversation I had a short time after the above with a gentleman who has spent his whole life amongst Ferns, and has been one of the most successful collectors of special varieties that I know. I refer to Mr. Barnes of Levens in the Lake district. This gentleman had not come to any decision on the subject of cross-fertilisation, he had tried to raise a crested form of a *Lastrea* by sowing the spores of a crested and non-crested form together, and a plant was produced of an abrupted form. The probability, however, is that the same might have been obtained without the mixing of the spores.

I will now try to show from my own observation and experience, as well as from collected facts, how many of our abnormal Ferns have been raised or collected, but the raising of plants will have the most direct bearing on the subject in hand. The first I will notice is *Lastrea dilatata grandiceps*, a crested plant that was raised by Mr. J. Barnes. This plant was raised

from a common wild plant collected in the neighbourhood. A frond of the newly collected plant was given to Mr. Barnes. He sowed spores from it. The result was two crested varieties, but *grandiceps* is by far the best. The next was raised in the same way. *Scolopendrium vulgare* var. *endiviasifolium* is referred to by G. Johnson, Esq., at page 61 of his work on British Ferns as being raised by Mr. Young of Taunton from a plant which he collected, and was named *laccatum*. Mr. Young sowed spores from his plant; the result was the beautiful Fern which is known by the name of *laccatum*, but was named by him *endiviasifolium*, and is true to the description given of it twenty-five years ago, although it was doubted whether it would prove constant.

I will now refer to similar results from plants that I have collected in their native habitats. The first I will call attention to is a *Scolopendrium vulgare* of the superlineate class. This plant has a fimbriate margin, and the apex is recurved, turning over upon the surface of the frond and channelled at the back. From the spores of this plant I have raised several good varieties. The first is somewhat improved in its marginate character, but several others are multifid plants. The one that is most advanced is the best of the superlineate section I have ever seen. Another plant in my collection, a *Scolopendrium* of the ramo-digitate section, was collected by me, and has a little of the marginate character. I never tried to raise anything from this plant, but a friend of mine requested me to give him a frond. No doubt it was one of the best, for it was one I had taken off and dried. The spores were taken from this frond and sown. The result has been astonishing, for some of the best ramo-marginate crested plants have been the result, and also many plants which were true to the character of the old plant.

I will next note the sportive character of some *Athyrium*. Many years ago I bought a plant of *Athyrium Filix-foemina* var. *Craigii*, which was never very heavily crested, but I have raised from it many distinct plants, and I have one which I have grown for a specimen plant. This plant is true in character, but has crests twice the size of those of the old plant. Another has a crest which surpasses anything that I have ever seen, but which has nothing below the crest. I hope I have said enough to prove that our abnormal Ferns are not the result of cross-fertilising, nor do I believe that such results can be brought about by self-fertilisation.

As I have not said anything about raising Ferns from bulbils I would now refer to it in a few words. The results in a minor degree are the same as from spores; for instance, in a batch of young plants raised from *Scolopendrium Coolingi* I had many very common plants, but I selected several that promised to be very good, and which have proved so, and also the young plants from them are equally good. Those common plants Mr. Cooling named pseudo-Coolingi, and if I remember rightly the *Scolopendrium Wardii* was raised in the same way as *Coolingi*, and along with it pseudo-Wardii. I think anyone duly considering the facts stated in these notes cannot believe the varieties raised to be the result of any other agency than that of an inherent principle, and that when the spores were sown that principle was there which produced the results referred to, and was in no way interfered with in the prothallium state.—JOHN EASTON, *Sheffield*.

NOTES AND GLEANINGS.

AT a General Meeting of the Royal Horticultural Society, held on the 10th inst., the Right Hon. Lord Aberdare in the chair, the following candidates were duly elected Fellows—viz., Mrs. Jordan Crewes, E. S. Dodwell, Capt. G. F. Heyworth, Frederic Jomelyn, Mrs. Montagu, Mrs. Otter-Barry, Peregrine Purvis, Rochfort A. Sperling, Mrs. Frances Trower, H. C. Webber, and T. F. M. Williams.

—THE WEATHER during January was very severe in Essex, and much injury has been done in gardens; but the month was a remarkably dry one. Rain fell on six, and snow on two days at Orsett Hall, amounting in the aggregate to only 0.21 inch. At Sheffield it has been very pleasant for the last three weeks, the weather being mild and bright. On the 8th inst. a thunderstorm with hail passed over Biggleswade, and was succeeded by frost at night. In London the dense fogs have at length dispersed, rain has fallen, and the weather is mild.

—THE INTERNATIONAL POTATO EXHIBITION OF 1890 will be held at the Crystal Palace on September 22nd and 23rd, when the liberal prizes offered in the different classes

will no doubt induce a large number of growers to enter the lists. Fifteen classes are enumerated in the schedule generally similar to previous years, but with a few additions. The Lord Mayor, the President of the year, offers the first prize (£10 10s.) in the class for twenty-four dishes. Four other prizes are also offered in that class. Messrs. Suttons' prizes we have already alluded to, and the following gentlemen and firms also offer prizes:—Mr. Alderman Hadley; James Abbiss, Esq.; Mr. L. Fawell; G. R. Bengough, Esq.; Mr. R. Dean; Messrs. Hooper and Co., Daniels Bros., E. Webb & Sons, J. Laing & Co., Barr and Sugden, T. Gibbs & Co., Harrison & Son, and the Amies Chemical Manure Company.

— ON several previous occasions we have referred to the excellence of the Grapes in the large VINERY AT CHIEWICK last autumn. We now learn from the annual report of the Royal Horticultural Society that the crop realised the handsome sum of £400, a fact that speaks extremely well for Mr. Barron's cultural skill. It is possible that the unusually wet season may have proved beneficial to the old Vines, all of which are planted in outside borders.

— PART 8 of "GREENHOUSE FAVOURITES," published by Messrs. Groombridge & Sons, contains the completion of the practical instructions relating to the Clematis, and an unsatisfactory list of the early-flowering varieties. Chapters are also given on the Balsam and Primula. The coloured plates represent *Pelargonium Polly* and *Primula japonica rosea*.

— A CORRESPONDENT writes to us as follows on *DACTYLIS GLOMERATA LONGISSIMA AUREA*:—"This, sent out by Messrs. E. G. Henderson & Son, is a valuable addition to our list of plants specially adapted for decorative purposes. It has long drooping leaves, hanging gracefully down over the pot. In any raised position it is very effective and pleasing."

— OUR attention has been directed to the circumstance that the article "WHEN TO SOW AND PLANT IN LATE DISTRICTS," which appeared on page 93 of our last issue, was to a very great extent copied from an article written by Mr. J. Simpson of Wortley last October, and published at the time in two of our contemporaries, which we had not read. We regret this, and the writer who attached his name to the communication in question must bear the responsibility of his own indiscretion.

— THERE is now flowering in the gardens of J. E. Reynolds, Esq., Oakvale House, West Derby, Liverpool, a fine plant of *LÆLIA ANCEPS* bearing eleven spikes of flowers, one spike having four flowers and all the rest three each. A very fine variety of *Cattleya Warscewiczii* is also bearing six blooms and is very beautiful.

— AMONG the numerous plants that may be grown with advantage for flowering during the early months of the year is *JUSTICIA CALYTRICHA*. When well grown it produces fine heads of flowers of a most delicate pale yellow hue that afford a pleasing contrast with other brighter coloured flowers. A stove temperature is required for the cultivation of this plant, a soil composed of loam, sand, and peat, with good drainage and liberal supplies of water.

— AN amateur writing to us on ZONAL PELARGONIUMS IN WINTER, states that plants which won first prizes at local shows in the summer were blooming with great freedom at Christmas and onwards. The following was the method of treatment adopted:—"The blooms were all cut off at the end of August, and the plants placed out of doors for a month, when they were removed to a house and treated liberally, with abundance of flowers as a result. Recently the blooms were removed a second time for a fresh start. The varieties that proved most useful were *Vesuvius*, *Salmon Vesuvius*, *White Vesuvius*, *New Life*, and an old variety named *Sensation*; which it is stated "should be in every large collection, especially where cut flowers are in demand."

— OUR Clonmel correspondent writes as follows concerning *EUCHARIS AMAZONICA*:—"One of the finest specimens of these I have recently noticed is at present blooming at Oakville House, near this town. There are fifteen scapes with at least five blooms on each. The size and beauty of the flowers, and the healthy deep green tinge of the foliage, are as remarkable as the blooms. None possessing the necessary heat and moist atmosphere should be without this plant for winter decoration. While flowering it can be removed to the drawing-room or conservatory without injury."

— THE same writer also observes—"From some years' experience of *PELARGONIUM GRANDIS ODORATA*, I desire to

recommend it as a winter decorative plant requiring cool treatment. It belongs to the scented-leaved section, and is one of the few that will bloom profusely during the winter months, especially when the wood is properly ripened by full exposure in summer and autumn. I have tried it during the last few years as a window plant in one of our sitting-rooms where no fire is maintained, and with most satisfactory results, the only attention bestowed being an occasional supply of weak liquid manure. The flower is violet rose with dark spots, while the large, rough, sweet-scented leaves are a fine deep green."

— WE have received from James Carter & Co. a specimen box of their new CONTINENTAL COLLECTION OF VEGETABLE SEEDS, which they believe will meet a very general want, especially amongst those who have been accustomed to enjoy these vegetables at the continental *table d'hôte*. The box contains eighteen packets of seed—quite ample for a trial of the varieties being made in English gardens, in which they are not generally cultivated.

— AT the next meeting of THE METEOROLOGICAL SOCIETY, to be held by permission of the Council of the Institution of Civil Engineers at 25, Great George Street, Westminster, on Wednesday, the 18th inst., at 7 P.M., the following papers will be read:—"On Typhoons in China, 1877 and 1878," by Lieut. Alfred Carpenter, R.N., F.M.S. "Note on the Reports of Wind Force and Velocity during the Tay Bridge Storm, December 28th, 1879," by Robert H. Scott, F.R.S., F.M.S. "On the Frost of December, 1879, over the British Isles," by William Marriott, F.M.S.; and "Thermometric Observations on board the Cunard R.M.S.S. 'Algeria,'" by Capt. William Watson, F.M.S.

— THE vegetation of that most interesting spot to the botanist, the ISLAND OF ST. HELENA, has strangely changed since its discovery 360 years ago, for then it was entirely covered with forests, the trees drooping over the tremendous precipices that overhang the sea, and the undergrowth was composed of plants peculiar only to the island. These have been nearly all destroyed, and a recent writer thus describes the appearance of the island—"At the present day the most conspicuous features in the landscape of St. Helena, as viewed from the highlands, are the sombre plantations of Pinaster (only introduced in 1787), which contrast strongly with the willow-leaved Acacias of New South Wales, whilst on all sides are ever wider extending acres of *Phormium tenax* grown for the sake of its economical fibre."

SMALL BIRDS.

YOUR correspondent Mr. Ferguson rightly remarks that gardeners and farmers should learn to distinguish between their friends and their enemies amongst birds. Apart from the effects of last winter I see no reason to think that birds are becoming scarcer, and I have lived in the country and observed them for more than fifty years. The great increase of game-preserving in districts where formerly bird-nesting boys and hedge-poppers had a free run has done much to increase the population of small birds, besides tending to lessen the number of their natural enemies. The fruit-eating birds—blackbirds, starlings, and thrushes, though trying to the patience when Strawberries and Cherries are ripe, make up for their depredations by the number of slugs and snails they destroy in spring. Titmice, though they pull to pieces many fruit-tree and Rose-tree buds, have the excuse that they are really searching for insects which hide there in winter; but sparrows and chaffinches, greenfinches and bullfinches, have no merits which compensate for the mischief they do. The sparrows begin as soon as the first yellow Crocus is open in my garden, and pull the flowers from nearly every Primrose, Polyanthus, and Daisy, and I have certainly seen greenfinches helping them. If these birds or chaffinches can get at a seed bed in the kitchen garden they will draw every plant as it pushes through the soil, thinking nothing of creeping through the meshes of a net. The bullfinches would not leave a bud on the Gooseberries if I did not dress the trees with sulphur and lime. Beware of thinking they will not do it if you protect and befriend them. They may do you the favour of keeping you, as the Cyclops kept Ulysses, to be eaten last; but some day they will come like locusts, and your hopes of a crop will be gone in a day, probably a Sun-day.

The gardener's true friends amongst birds are those guests of summer, the delightful tribes of swallows, flycatchers, black-caps, wagtails, redstarts, whitethroats, cuckoos, &c., which feed

entirely on flies and caterpillars or other insects, and keep down many garden pests. Sparrows have advocates, who say that when they can obtain insects they do no harm to a garden, but good. This is nonsense. I have seen them from mere wantonness peck all the legs off a stagbeetle lying helplessly on its back, or knock down a large cockchafer imprudent enough to fly in the daylight, and peck him in two; but I have also seen them collect at midsummer in clouds to demolish a field of barley which was ripe unfortunately early, at the very time when the hedges round the field were swarming with that obnoxious hairy cockchafer *Melolontha solstitialis*, not one of which they condescended to touch.

I am sorry to say that larks, delightful as their song is, are not so harmless to the farmer as Mr. Ferguson supposes. They like nothing better than Chickweed in winter, and I have often watched them feeding. Their beak is weak, and they feed by pulling; and when they take to eating green corn, as they do in early spring, if the ground is soft they unintentionally pull up large quantities, leaving what is pulled up, and always pulling at what is growing. Many farmers know to their cost what damage they can do in this way; and for this reason, after careful consideration, their claim to be included in the Wild Birds Protection Act was disallowed.—C. W. DOD.

FLORISTS' FLOWERS.

CHRYSANTHEMUMS.—If strong cuttings of this popular florist flower were inserted during December or early last month they will now be ready for potting off singly. Any old shoots that are shy in producing cuttings should be assisted by a little heat, for although it is not too late to increase and complete the collection there should be now no delay in doing so. Some of the Japanese varieties are late in producing suckers, and experience teaches us that plants propagated from suckers produce other suckers much more freely than if increased from cuttings formed on the stem. After potting the young plants, the shelter of a coil frame placed in a warm and sunny position should be afforded them for some time to come. Attention must, however, be paid to ventilation on every favourable opportunity, so that they may grow dwarf and sturdy. Young plants intended for specimens are the better for being afforded a little warmth and plenty of root room to induce quick growth. See also that the stock is free from green fly.

DAHLIAS.—To increase these all that is necessary is to place the old stools or roots in a moist heat, and from near the decayed stem several buds will start, and soon form young growths. When these are about 2 inches in length they should be taken off and inserted singly in small pots, and plunged in a good bottom heat—a hotbed answers well; there they will soon strike, after which they should be gradually inured to the air to prevent them from becoming drawn.

FUCHSIAS.—Any plants yet remaining under stages or other winter quarters should be brought forward and pruned somewhat closely. By moistening the soil and freely syringing them they will soon be covered with young growths. As soon as these growths become about an inch in length the plants will be improved by shaking all the soil from the roots and placing them in smaller pots, where in a good light soil they will rapidly form new roots and require repotting as soon as the pots become tolerably well filled around the sides with fleshy white roots. Cuttings taken off and inserted in light sandy soil and kept close will strike very readily, and make by autumn valuable pyramidal plants for decorative purposes, producing a profusion of finely developed flowers if encouraged in moist heat. Vineries just starting are suitable for the plants until the sun becomes too powerful.

GLADIOLI.—Now that the severe and prolonged frost is past it is safe to plant these. Opinions vary as to the desirability of lifting and storing the corms every autumn, but after the two successive severe winters there cannot be any doubt that the cultivator who lifts his bulbs is better able to protect them. We have grown for several years large numbers of the old *Branchleyensis* amongst *Rhododendrons* and never lifted them. During mild winters the plan answered very well, and the corms increased and flowers were freely produced. Last winter was too much for them; very few were strong enough to bloom, while a few we lifted and replanted grew strongly and bloomed well. Corms that have been stored all the winter will be found to be pushing into growth, therefore plant at once in deep, light, and moderately rich soil.

HYACINTHS AND TULIPS.—Even the latest batch of these

should at once be removed from beneath the material in which they were plunged, or they will be so far advanced in growth that they may receive a check. We found ours very dry on removal, and was obliged to give a good soaking of water. Some years there is plenty of rainfall to keep them moist, but this winter has been an unusually dry one. Our bulbs were very backward, but after well soaking the soil with clear water they considerably improved. At this season of the year very little extra warmth is required to forward them, so those intended for blooming towards the end of March should be brought on as gradually as possible. Weak liquid manure made from cow dung and soot may be alternately given them after this period.

ROSES.—Proceed without delay with any planting not yet finished, for it is quite time it was completed; but for the severity of the winter it would not be necessary to give this advice. Do not attempt to prune any outdoor Roses yet, and in numbers of places we fear it will be found that large pieces are dead or dying. It is a singular fact in connection with Roses that it is not the young wood of the current year's growth that becomes injured by frost, but the old wood. We have at the present time many dwarfs and standards with fine growth apparently very healthy even to the uppermost buds, but the lower wood is quite killed. If left unpruned the uppermost buds would push into growth, but it is impossible for it to retain its vigour long, so it is best removed at pruning time.

ROSES IN POTS.—The chief batch of these should be in an advanced state, and require syringing night and morning; this will not only keep green fly in check but assist the plants in breaking freely. Maintain an even and moderate temperature and avoid draughts, or the tender leaves will become attacked with mildew. On the first appearance of this dreaded pest well dust the foliage with flowers of sulphur. Prune those plants intended for a later supply, and tie the points of the shoots downwards so that each plant when it has all the points bent down will bear a resemblance to an inverted umbrella. All Roses in pots are best pruned some time before starting them into active growth.—J. W. MOORMAN.

GALVANISED WIRE.

I HAVE had some experience on training fruit trees to this wire both in my last and present situations. In my last I grew Vines, Melons, and Cucumbers on galvanised wire trellises, but kept painted every two years, and I never found they sustained the least injury. In my present situation the wire is unpainted, and my experience is quite the reverse. I find all Peach, Nectarine, and Apricot trees more or less affected—wherever the shoots come in contact with the wire they are eaten partly through. I should like to hear the opinions of some of your readers on painted wire, whether it has the same effect, and if they consider unpainted wire would attract lightning and so cause the injury.—T. H.

I SUGGEST to your correspondents of the 22nd inst. to tie Peaches and Vines loosely with soft matting. Do not let the branches lay on the wire, for if tied tightly any wire will injure the bark. One of your correspondents asks what to do with branches already injured. I would let the trees alone, but tie loosely as suggested, and Nature will probably heal the damage unless the maimed branches are utterly ruined.—HAMPSHIRE.

IN reference to the remarks of W. Taylor, on page 95, on galvanised wire and the chemical action of some samples of water upon the zinc, I had occasion a little more than a week ago to make up a stand for the decoration of the dinner table, consisting of a cone of damp sphagnum moss 20 inches high and 15 through at the base, which was surfaced with *Selaginella denticulata*, and in which was inserted at regular intervals heads of Poinsettias, white Camellias, *Dendrobium nobile*, and other flowers. During the week the stand has been frequently used, and has been much admired for its simplicity and effectiveness. The sphagnum was held in its place by thin galvanised wire coiled round from the bottom to the top. Yesterday on taking it to pieces I was surprised to find that the zinc was nearly all eaten off the wire, leaving the iron nearly as bare as before galvanising; what little still remained upon it would easily rub off with the fingers like dry flour.—W. K. WOODCOCK, *Sheffield*.

P.S.—At Mount View, the residence of D. Ward, Esq., I was a few days since shown some Peach trees which have been

seriously injured by the galvanised wire upon which they had been trained, consequently they are now having it taken out and replaced with copper wire.

PEAR SOUVENIR DU CONGRÈS.

BEFORE referring to the more decidedly autumn Pears, we desire to direct attention to this remarkably fine variety which

immediately precedes them, and forms a valuable succession to that most useful of all early autumn Pears, Williams' Bon Chrétien. We figure this variety to meet an objection that has been urged, that with few exceptions the Pears that have been recently referred to are not of imposing appearance when placed on the dessert table. *Souvenir du Congrès* is not only very large and handsome, but is of excellent quality, and it is proving to be hardy, a good grower, and a fair bearer in many

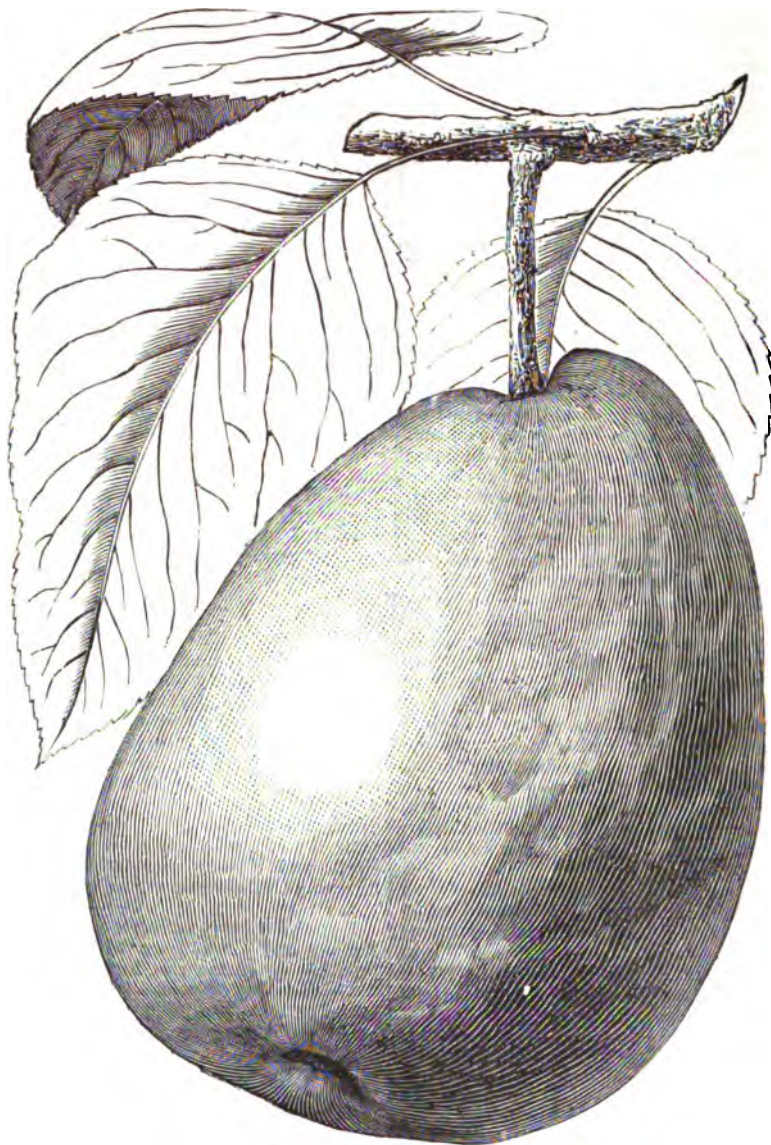


Fig 19.—SOUVENIR DU CONGRÈS PEAR.

districts. As this Pear is not so extensively known as the other varieties that have been represented, we append a description of it:—

Fruit large, $3\frac{1}{2}$ inches long, and $2\frac{1}{2}$ wide, and often much larger; oblong obovate, sometimes uneven and undulating in its outline. Skin considerably covered with smooth cinnamon-coloured russet, with here and there patches of the yellow ground colour exposed; on the side next the sun there are streaks of bright crimson and a warm glow of russet. Eye large and open, deeply set. Stalk an inch or more long, very stout, inserted either in a pretty deep cavity or on the end of the fruit in a slight one. Flesh yellowish white, tender, very juicy and melting, with a rich vinous flavour and musky aroma.

A very handsome and excellent Pear. It has a great re-

semblance to Williams' Bon Chrétien, but is quite a distinct fruit.

DICHORIZANDRA THYRSIFLORA.

THIS old but beautiful ally of the *Tradescantias* seems, like many other good plants, to be comparatively neglected or forgotten by cultivators at the present time. Seldom is it seen in gardens, and yet as a stove plant it surpasses in decorative value many of more recent introduction that require considerably more care and attention to obtain them in good condition. It is of quick growth, and flowers freely during late summer and autumn. The flowers are of a rich dark blue tint, which contrasts very pleasantly with the bright yellow anthers in the

centre; and the heads or thyrsi are compact and frequently 6 or 7 inches in length, the sheathing leaves being broad and of an extremely dark green colour. Although best adapted for the stove, the plant may also be successfully grown in a conservatory during the summer if placed in a warm position,

or it can be grown on in a stove or house of a similar temperature, and when in flower be removed to a cooler position, and finally to the greenhouse. Its cultivation is very simple, as it only requires a rich light compost of loam, sand, and peat, with thorough drainage, abundant supplies of water, and



Fig. 30.—*DICHOZANDRA THYRSIFLORA*.

a brisk temperature. When growing occasional supplies of weak liquid manure are very beneficial to the plant, and greatly improve the size of the flowers and heads. After flowering less water is necessary, but the soil must never be allowed to become excessively dry.

About a dozen species of *Dichorizandra* are known, all natives of South America. *D. thyrsiflora* was introduced to

this country in 1822 from Brazil, where it flourishes, particularly in the neighbourhood of Rio Janeiro.—L. CASTLE.

CITRON DES CARMES PEAR.—Having read your correspondent's note respecting this Pear on page 76, I may say that with me it is a variety that might be grown for the name of having a dish of Pears. One tree trained to a wall ought to

be sufficient. It is a very early variety, coming-in in August, just when a Pear of inferior quality in my opinion can be dispensed with, as there are then plenty of Plums and other fruits. This Pear with me is over in a day or two after it is ripe. If I had two trees of this Pear on a wall I should remove one and plant in its place Glou Morceau or some other later and better variety.—B. M. A., *Cheshire*.

ROSE STOCKS, AND EFFECTS OF THE WINTER IN THE NORTH.

ON page 60 of your Journal I find a letter signed J. Hopper, *Lancashire*, in which he gives his experience as regards stocks for dwarf Roses. I thought that a word or two from the white Rose (Yorks) would naturally follow that of its red sister. Mr. J. Hopper seems all in favour of the seedling Briar at the expense of the Manetti; but I think that is rather too sweeping, as the Manetti had to serve the amateur's purpose (generally with great success) long before the seedling Briar came prominently into notice. Although the writer does not say so, I fancy he finds Roses on the seedling Briar require less support than those on the Manetti. That is my experience as regards manure; but in vigorous varieties I can grow as good Roses on the Manetti as on the seedling Briar, so that hardly corresponds with the experience of your correspondent, who thinks that it is only a question of soil and situation. Most likely I am as unfavourably placed as he is, being near a large town. Although having a deep strong soil on a clay bottom, I am much in favour of the seedling Briar generally, for it withstands the damp where the Manetti decays, and especially for certain varieties that do not succeed on the Manetti here, such as Antoine Ducher, Baron Bonstettin, Baronne de Rothschild, Black Prince, Capitaine Christy, Charles Lefebvre, Etienne Levet, Horace Vernet, La France, Louis Van Houtte, Madame Lacharme, Francois Michelin, Mons. E. Y. Teas, Reynolds Hole, Sultan of Zanzibar, and Xavier Olibo.

To show that I have no prejudice against the seedling Briar, I may say that I have bought this autumn one hundred plants on that stock, along with a like number on the Manetti. On looking those over a few days since I was surprised how much better those on the Briar had stood the winter than those on the Manetti. The wood of the former seemed better ripened than that of the latter, although they had come from nearly the same district. The Rev. C. P. Peach, on page 77, alludes to Roses on the seedling Briar being later than those on the Manetti, and says that the latter came ten days earlier than the former. Well, I think that this, instead of being a drawback, will most likely be an advantage to one who grows Roses for garden decoration, being a means of prolonging the blooming season to those who employ both stocks. But for choice let me have Roses on their own roots, for such have stood the winter better than those on stocks—the wood seems better ripened.

In growing standards I agree with the "CURATE OF HOWDEN" as to the folly of attempting it in the north, as with the exception of a few of the hardiest, including Gloire de Dijon (this Rose stands the best on standards with me), mine are all killed, which is all the more vexing, as they were mostly my own budding, the Briars having been planted and then budded where they were to stand. They stood through the previous winter of 1878-9, without injury, and grew and bloomed well last season.

The "CURATE OF HOWDEN" asks for the experience of brother rosarians in the north as to the ravages of this winter. Mine is as follows: Early in the autumn I cut most of the old wood out of established plants, making all suitable into cuttings (of which I have a couple of frames full, looking promising), finished planting and replanting, and then mulched the border with straw manure, adding more as it came out of the stable, till it was 8 or 9 inches thick. So well has this material protected the Roses that during the most intense frost I could thrust a stick a foot deep into the soil. Some of the long unripened shoots are killed down to the manure, but on opening it out I find the shoots below quite green and plump. Out of the four or five hundred plants that I have, so far as I can see, I shall not lose above a dozen. Much has been said of late about unripened wood, and, in justice to the trade, I find that the shoots on the established plants have fared no better than on those newly planted, the last autumn being such a bad ripening season.

I have been surprised at the difference between the amount of snow in the various parts of the country. The Rev. W. F.

Radcliffe, writing in your Journal on the 18th of January, stated that they had 8 or 9 inches of snow, and here we had not even a covering, although a very severe frost. In fact, we have had very little snow since Christmas. This winter has caused more losses in Roses, Laurels, Ivies, Aucubas, Rhododendrons, and Portugal Laurels than the winter of 1878-9 in places in this district where they are unprotected. Have any of your readers noticed their losses of Tea Roses in pots this winter? I have lost more established plants than I have for the last three years, although they have been well protected in cold frames and plunged in cocoa-nut fibre—exactly the treatment I have pursued for years. Hoping the above may be of use to amateurs in a similar situation to myself; and before they throw out their stock of dwarf Roses on the Manetti and buy in at a great expense other sorts, which I know some have done, they will look well to the drainage, yearly manuring, and transplanting about every three years, and they will find that in vigorous varieties the Manetti will in most situations produce as good Roses as those on the seedling Briar. At least that has been my experience, and I think that both stocks may be advantageously grown by the amateur Rose-growers of the north.—F. W. J., *Yorks*.

PRECOCITY IN VEGETABLES AND SEEDS.

A LETTER with the above heading appeared in your Journal of January 1st from Mr. T. Laxton, which opened a most important question. His remarks I entirely endorse, not only on practical but also on theoretical considerations. I hoped that an abler pen than mine would have returned to the subject, and that I should have read other replies besides the adverse criticisms of "SINGLE-HANDED" in your issue of the 15th, and Mr. Laxton's temperate reply in the following number. Perhaps one of the greatest triumphs of the horticulturist has been the production of fruits and vegetables, having such a range of maturity as to supply our wants at nearly all seasons of the year. Mr. Laxton puts it, "Early to bed early to rise," or by selection of seeds that show precocity we anticipate the general maturity of their progenitors. On the contrary, late-growing plants being selected, we produce a hereditary tardiness. With Potatoes, again, the early varieties show an early propensity to shoot even when not planted. I have repeatedly proved this, and was obliged to discontinue the growing of Suttons' Early Racehorses, from the fact that it appeared so early that if not planted it would require constantly checking, or if planted was invariably cut off by frost.

It is a curious fact that in the vegetable world particular habits are acquired, and these when constantly exercised in one direction or another become permanent. We find rest is required for the healthy growth of most plants. The chemist and physiologist tell us that certain important changes take place during this rest. In seeds, stems, and tubers are accumulated those products which in the laboratory of Nature gradually form starch, which undergoes a change, becomes soluble, and sustains the germ of the future plant. This maturity is dependant on time, heat, and light; when properly matured the seed is fitted to reproduce its kind, and finds the starch in a condition that can be assimilated by the germ. The germination may be delayed for a considerable period, and the seed may remain dormant, as when kept from light and moisture for a long time; or germination may be accelerated by a process which prematurely sets free the organisable matter. In both cases, however, there is a deterioration in the product. When a wet harvest succeeds a period of drought it often happens that the corn will grow very readily in the sheaf, the drought having prematurely formed the starch products in the seed. The period of plant growth and flowering is doubtless acquired by long cultivation in a particular clime and country. With annuals it is known that (those from California especially) produce the best plants when sown in the autumn. This acquired habit of flowering at a certain period may also account for the winter blooming of some introduced plants, the Chrysanthemum for instance, which is often destroyed in this country by early frosts. I might give numerous other instances.

Our florists have directed their efforts more to the form and colour of the flower than to its period of maturity. The precocity and consequent hardness of our Peas, and the long period of time during which the varieties flower, might show florists the direction in which they may proceed to give us flowers, and the considerations I have before mentioned may be taken advantage of in producing even Roses with const-

tutions to endure the rigours of such a season as this.—GEORGE DOWKER, *Stourmouth*.

BOILERS AND PIPES.

So frequently have the merits and demerits of the various boilers now before the public been discussed, that the subject of heating garden structures must have become a perplexing one to many. Yet the whole matter lies in a nutshell. What is a horticultural boiler, and what are its uses? It is a hollow, stout, iron vessel made to contain water, and of such a form that its contents may be heated with promptitude and made to circulate through pipes kept hot with ease. To attain these desiderata simplicity of form, soundness of material, and good workmanship should be combined. Every angle, joint, or addition to a boiler is a weak point, for it is precisely there that failure occurs.

It is not my purpose to compare the different kinds of boilers, or to insist upon the superiority of any particular patent; for I am anxious to keep clear of vexed points, and to do real service to that numerous section of your readers to whom an extra ton or two of fuel is an object, by showing how they at any rate may rest contented with the old saddle-back. Beginners must not be forgotten, and on their behalf the saddle-back boiler may be described as a hollow arch of iron without bottom or ends, from two to a dozen feet in length, and of diameter proportionate to its length. It is received from the foundry intact without openings of any kind. Three holes are then drilled through its sides, one at the top, another close to the bottom, for the flow and return of the water through pipes fastened to the holes, and another near the bottom of the feeding pipe, with a tap to empty the boiler, and with the other end connected to a cistern with a ball-tap. A ball-tap and large feeding pipe are to be regarded as indispensable adjuncts to all boilers. I was once consulted about the failure of the heating apparatus of a large mansion, which at first had answered well, but had gradually failed to afford sufficient heat. Upon examination I found plenty of pipe coils well placed, each coil with a suitable air valve, good flow and return pipes, and a boiler of ample size and well set, with a feeding pipe from a large cistern with a ball-tap; but the feeding pipe was only half an inch in diameter, and had gradually become so much corroded as to be almost choked, consequently when the boiler was at work a prompt supply of water could not be maintained; indeed the boiler was often only half full of water, and the inside of the top had become so much burnt that water was oozing through. A new boiler and larger feeding pipe had to be obtained, and all was again satisfactory.

Another point of considerable importance is to have the flow pipe issue quite out of the top of the boiler in order to insure a steady and full flow of water. To fix a flow pipe in the side, if only a couple of inches below the top, is to create a vacuum where steam accumulates, and offers much resistance to circulation, which then at best becomes a series of alternating gushes of steam and water. It is surprising how ignorant workmen who are constantly employed about heating apparatuses are on the philosophy of heating. A high-pressure boiler set behind a kitchen range to supply a bath room, and taps with hot water in various parts of a large building, did not answer, the water often being cold in the pipes long after the fire was lit. I had to examine it, and found the flow pipe entering the back a little below the top, which fully accounted for the failure. The pipe was at once cut off, the hole plugged, and the pipe connected to a new hole drilled down through the top, a perfect cure being the result. This example may seem a little wide of horticultural heating, but in reality it is not, a common principle governing both.

No pipe, either flow or return, should be exposed to the action of the fire. I once had a saddle-back boiler heating a range of plant houses apparently leaking seriously in the midst of a severe frost; upon pulling down the brickwork the return pipe was found to pass right across the flue into the side of the boiler near the end where the heat was fiercest and was burnt to a mere shell. The new pipe was fixed just beneath the flue bottom, thus altogether avoiding contact with fire, and leaving the flue quite open, not only for the free passage of heat, but for cleansing the boiler from soot.

Still keeping beginners in mind, I may explain that our saddle-back must be so set in brickwork that every portion of its surface inside and outside the arch is exposed to the action of the fire. This is done by building an arch or shell of brick-

work over the boiler and a few inches from it, supported at top by a row of bricks placed along, and upon the top of the boiler with one brick left out at the end over the furnace door: thus causing the fire to pass first through the boiler, then back along one side, over the top through the opening made by leaving out the brick, and along the other side before it enters the chimney through an opening of the damper which is set in the shaft just above the boiler. Economy of heating much depends upon the careful manipulation of the damper and ash-pit door, and this brings me to the stoker, upon whose care and intelligence so much depends. I make no accusation of general carelessness, but will ask stokers, Do you throw on fuel as a matter of course, or do you first consult the thermometer to see if it is necessary? Do you regard dampers and ash-pit doors as important conservators of heat, and keep them almost closed after the water is sufficiently hot to prevent unnecessary draught and the escape of heat up the shaft? Do you take especial care to cleanse the boiler and flue of sooty accumulations? because soot is a bad conductor of heat, and checks the prompt action of the fire upon the boiler.

I have thus adverted to some of the details upon the close attention to which success or failure rests in no inconsiderable degree. Now let us turn to the piping, for it is here that we may trace the cause of many so-called failures of boilers. Nine houses out of ten have not enough piping, and yet a little extra outlay for pipes in the first instance points to an important saving of fuel, for with ample piping a moderate fire will maintain a steady heat, while on the contrary insufficient piping leads to an extravagant use of fuel. Let also the piping stand well away from walls and be elevated upon pipe rests above the floor, to afford full play for every particle of heat as it passes from it. I refrain from any statement of quantities, because not only the size of a glass house but its intended use are both important factors in the matter, and amateurs requiring assistance can always obtain it by sending details and measurements to 171, Fleet Street; but they must not expect to be told which is the "best boiler," as it is utterly impossible to answer such a question, for success in heating depends more on the setting of a boiler, arrangement of pipes, and general management, than on any particular form of boiler.—EDWARD LUCKHURST.

STRAWBERRIES IN NORTH BORDERS.

KNOWING Grimston Park Gardens very well, and the good culture practised there, I was glad to see a note from Mr. Clayton on the above subject. Like your correspondent I cannot comprehend how a lengthened supply of Strawberries can be maintained without growing a good number of plants on north borders. With the object of lengthening the supply I have always grown a few plants on south borders, the bulk in the open quarters, and the remainder, perhaps the sixth of the whole, on a cool north aspect. For a hot southern aspect I know no variety so useful as the serviceable old Black Prince. True it is small, but it is early, and I have always found dishes of it a week before fruit is ripe in the open quite as acceptable as the finer fruit succeeding. The varieties chiefly grown in the open and on the north border are Vicomtesse Hericart de Thury, President, Sir Joseph Paxton, Dr. Hogg, Elton Pine, and Eleanor, which ripen very much in the order named; but President and Sir J. Paxton are always in use together, and also the two varieties last named. A supply of fine fruit is usually maintained for a month, but this could not be done without the north border; indeed I have known the crops in the open quite over in a fortnight when hot weather has prevailed in July. But to produce the best crops in the north border I have found it necessary to plant a good breadth or length of strong plants annually, as owing to an absence of sun plants do not form stout crowns in a cool shaded position the second year. The very best mode of procedure is to grow the requisite number of plants in pots as if for forcing, and plant them on the north aspect in August. The next best plan is to peg the runners into thick turves 6 inches square, and when the turves are matted with roots and the plants very strong transfer them to the border, planting them 18 inches apart. With these turves and liquid manure very fine plants can be produced that will yield good crops of large fruit the first season.—J. J., *East Riding*.

PRIMULA JAPONICA.—This plant is perfectly hardy in East Lothian, many of the plants in the borders having several

crowns each. *P. cortusoides* is also hardy. In opposition to what Mr. O. W. Dod says about a slight raking entirely exterminating the crowns, the crowns of my plants are quite beneath the surface. There is a difficulty in keeping the varieties of anemone, as their rhizomes are easily destroyed. *P. denticulata* lives in the border, but is much injured. In the warmer rockwork it has succeeded well. I have neither *P. capitata*, *P. cashmeriana*, nor *P. rosea* out of doors. Much depends on position as regards the hardness of these plants."—R. P. BROTHERSTON.

HEATING WITH GLAZED SANITARY PIPES.

IN reply to numerous inquiries respecting the heating of two vineries here with sanitary pipes, I will for the benefit of those interested give you details of the plan I have adopted; but first a few words as to the causes that led me to try the pipes. I had frequently been called upon to prepare drawings for vineries and greenhouses, and to supply specifications and costs. I was always struck with the large proportion of the costs that figured in the estimates for heating when done by hot water. This often formed a serious drawback to gentlemen of limited means; so when I prepared the designs for the two vineries in question, with a circular-roofed greenhouse between, I tried some experiments with sanitary pipes, which were so far successful as to induce me to give them a fair trial; and as the estimate for heating the three houses stood at about £300, just one-half of their entire cost, I had full permission to try the experiment.

The vineries are span-roofed running north and south, the shed walls forming the north end. They are 26 feet long, 22 feet wide, and 18 feet high. The furnace is in the back shed, and the fire is carried on one side of the house in a brick flue 18 inches deep and 12 inches wide, inside measure; then two rows of sanitary pipes 8 inches in diameter are inserted in the flue and carried across the south end. In the opposite corner I built a hole about 18 inches square and 2 feet deep; into one side I inserted the pipes crossing the end into the other, the pipes running up the other side (this arrangement is for cleaning out the pipes expeditiously), which enter the chimney in the shed wall. The pipes are laid one row upon the other, and the heat is equally dispersed through them; the pipes farthest from the fire are warm as soon as the bricks on the side where the fire enters. The pipes are connected with cement. We always keep a small galvanised wire laid through the pipes, and when they require cleaning the corner covers are removed and a bunch of Holly tied to the wire and drawn through, the wire is then drawn back to its place with a piece of string. The fuel used is principally cinders from the Hall. One house was completed in 1870, the other in 1871. The Grapes are ripened in one house in July, the other in September. There are now three cracked pipes which require removing, that is all the repairs that have been needed. The greenhouse is heated by a brick flue. The costs for heating the three houses did not amount to £30.—T. R. J., *Sodbury Park*.

WORK FOR THE WEEK.

HARDY FRUIT GARDEN.

THE pruning of Apricot, Peach, and Nectarine trees should be unhesitatingly and brought to a close as soon as possible. In pruning Apricots cut away all dead spurs or those that are bare of fruit buds, and shorten-back any not suitable for laying-in to within an inch of their base. Thin out the wood where too crowded, and especially old growths, training in their places young healthy shoots. Peach and Nectarine trees will only require to have their old bare wood cut out and the shoots or branches thinned where too crowded. The fan mode of training is the best for most fruit trees against walls, as it admits of the ready removal of old weak branches. One of the greatest mistakes in the treatment of fruit trees against walls is crowding the growths, training-in shoots during summer that must eventually be removed at the winter pruning, resulting in unripened unfruitful growths. The branches of the Peach and Nectarine should be 12 to 15 inches apart, and the bearing shoots a similar distance apart. The shoots for this season's bearing may be shortened to about 9 inches, and always to a triple or at least a wood bud, except in the case of extensions, which may be shortened back according to their strength to induce shoots at the required distance. If the trees have been infested with insects or mildew during the past season they should be dressed before being secured to the wall or trellis. Soft soap 1 lb. dissolved in half a gallon of water, adding half a gallon of tobacco juice, and half a gill of spirits of turpentine. If for mildew add flowers of sulphur to the

mixture, which must be applied with a brush. This compound is suitable for every description of fruit trees, and is fatal to every species of insect, also mildew.

The bloom buds of Apricots are swelling fast; hence no time should be lost in preparing protection of some kind, so as to be able to apply it at once whenever the blossom commences expanding, as up to that stage the closely folded petals protect the important organs of the flower, enabling them to resist frost which would destroy them were the flowers fully expanded. Of all protections except glass houses, glass coverings are unquestionably the best, especially when canvas is provided to place in front of the trees. Frigi domo, wool netting, mats, canvas of various textures are also good. We employ osier canvas, which answers admirably. Opaque material should be so adjusted as to be readily drawn off the trees to admit of full exposure when danger from frost is not apprehended, or when not required to shade the trees from bright sunshine, as is sometimes advisable. Protection may also be provided in the shape of straw or haybands secured to upright poles placed in front of the trees at about 2 feet from them at the base of the wall and outside the coping at the top, the bands being from 9 to 12 inches apart and fixed horizontally. A double thickness of herring nets is also a good protection; and among others, to remain on from the expanding of the flowers until danger to the tender fruit is past, may be named dry fern interwoven with the branches and sprays of Beech or Spruce.

Planting fruit trees should be proceeded with as speedily as possible; and in making plantations of bush fruit, such as Gooseberries, Currants, and Raspberries, it is better to keep them together, so as to facilitate netting to protect the fruit from birds. Beds and plantations of Strawberries that were mulched in late autumn with half-decayed manure should have it lightly forked into the soil after the removal of all weeds and decayed leaves from among the plants. Vines upon walls out of doors should be pruned without further delay, avoiding shortening the shoots too severely, but cutting to firm wood with prominent eyes, and thin out old weakly wood. Vines outdoors are not infrequently attacked with mildew, therefore before nailing or tying in the shoots paint them with the composition of soap and sulphur above named. Keep a strict look-out for bullfinches on Plum, Apple, Pear, and bush fruit trees. The only sure mode of preventing their depredations is to destroy them.

FRUIT HOUSES.

Vines.—The soil intended for making new borders should now be prepared. The best soil is the upper 8 or 4 inches of a rich pasture of a friable nature, inclining to be light rather than heavy, to which may be added a tenth of old mortar rubbish, a twentieth of charcoal, and a fortieth part each of half-inch or crushed bones and calcined oyster shells. If the loam be heavy the quantity of lime rubbish may be increased, also that of the charcoal, whilst if it be light substitute chalk for the mortar rubbish. Manure or vegetable refuse should not be added, manure of any kind being best applied as a mulch. In preparing the border, which may be proceeded with as the weather permits, bear in mind that no fruit tree requires more copious supplies of water when in growth than the Vine, and at the same time is more impatient of stagnant water; hence drains and drainage should receive first attention, and instead of excavating, concreting, and cementing keep the border well elevated as far as circumstances admit. If the border is intended for early or late Vines allow a sharp slope to the south for the purpose of throwing off the wet by shutters or other means. The best time for planting Vines is from April to June; and those intended to be planted at that season should now be cut back to the length required and be placed in a cool Peach house or pit to start into growth, and when the new shoots are 2 or 3 inches long shake out the plants and plant them in the permanent borders.

With increased length of days and a continuance of mild weather forcing may be pushed on rapidly. Ventilating and the supply of moisture must have daily attention, and be regulated according to the weather. Vines in flower should have a temperature of 65° at night, and the air of the house should be kept rather dry. Remove all unnecessary laterals, tie out in their permanent places those that are left, and endeavour to have every part of the trellis filled with as much foliage as can be fully exposed to light. Thinning the berries must commence with free-setting varieties as soon as they are formed, but any that frequently produce stoneless berries should not be thinned until it is seen which berries take the lead and in swelling. Remove duplicate bunches, leaving the best set and most compact, and avoid the too common practice of overcropping. All inside borders should be frequently examined, and when water is requisite it should be given a few degrees warmer than the mean temperature of the house. The fermenting material on outside borders must be attended to, and where the heat is declining renew it by the addition of fresh leaves and litter. Vines in pots must not lack moisture at the roots; supply them with liquid manure, and renew the surface dressings from time to time as necessary.

Cucumbers.—A favourable change in the weather has greatly assisted in the progress of Cucumbers. A little more moisture both at the roots and in the atmosphere may be allowed, and the

evaporation troughs may be regularly filled in bright weather. A slight increase of the day temperature may also be permitted. Be careful in the admission of air, avoiding cold currents. Encourage a free root-action by the introduction of fresh compost from time to time. Pits and frames must now be thoroughly cleaned, after which bring in the fermenting materials. The treatment of Cucumbers and Melons is so similar as to temperature that what is stated of one will answer for the other.

Melons.—Of primary importance in the cultivation of early Melons is brick bottom heat, and whether obtained from hot-water pipes alone, or in combination with fermenting materials, or with the latter only, it should be lasting. Hot-water pipes are unquestionably the best, as they afford a regular and lasting heat, yet a very successful result may be had by the aid of fermenting materials alone if due regard is paid to the preparation of the materials. Stable litter with an equal proportion of Oak or Beech leaves are the best. These should be taken in hand about a fortnight before it is desired to make the bed, and thoroughly incorporated by throwing them into a heap, and if dry they should be moistened. In a few days it will be seen whether there is moisture sufficient to produce fermentation; if so, turn the material over before violent heat is produced, and damp any dry material, but in case the material is not heated quickly it must be turned after a few days and receive water as required. In making up hotbeds for frames always employ a good thick layer of faggots for the foundation, especially if the site be low and damp, and take care to provide a bed large enough at this season, 5 feet high at back and 4 feet in front with the material well beaten down will not be too high. The frame or frames should then be placed on, and in four days or so level the bed if necessary, and place in the centre of each light about a barrowful of soil in the form of a flattened cone, the top about 1 foot from the glass. When the heat in the soil does not exceed 85° to 90° place out a plant in the centre of each mound unless the frame be large, when two plants may be placed under each light. Press the soil firmly around the plants, taking care, however, not to injure the stem, and place a little dry soot and quicklime around each plant to protect them from slugs. The day temperature should be 70°, and 10° to 15° more from sun heat, losing no opportunity of admitting air to allow of the escape of rank steam or accumulated moisture, but in no case must the air be admitted so as to lower the temperature below 70°. The night temperature should be 65° to 70°. Instead of planting out too soon shift the plants if necessary into pots a couple of sizes larger, plunging them in a bottom heat of 80° and near the glass, securing the stems to small stakes as the plants advance in growth. Plants for pits or frames should be stopped as before advised at the third leaf, whilst those for trellises should not be stopped, but the laterals must be removed up to the bottom of the trellis.

Orchard House.—The trees that were not pruned in autumn should now be examined, removing any irregular growths and thinning out the shoots where too crowded. Gross and unripened or weak shoots are best removed altogether. Avoid, however, severe pruning when the trees are at rest, as it is almost sure to result in vigorous growth. On account of the Peach, Nectarine, Plum, and Cherry being so liable to the attacks of aphides and red spider, it is advisable to dress them with an insecticide prior to placing them in the position they are to occupy during the season. Apricot and Pear trees should be placed in the lightest part of the structure, which can be thoroughly ventilated at all times, especially when the trees are in bloom. Apricots when in bloom should be kept dry and free from drip, and there is then little danger of the blossoms suffering from cold. Cherry trees in pots should also have a light and airy position, as, like the Apricot, there is sometimes a difficulty in inducing the fruit to set freely. In placing trees in their summer position it is important that the pots stand perfectly level. Each pot may be raised on three bricks, which will allow of the water passing away freely, whilst preventing the roots from entering the border. The soil of borders where the trees are planted out should if dry receive a good watering. Strawberries in pots may be placed on shelves at the sides of the house and over the pathways, and will afford, if properly attended to, a good crop of fine fruit several days before those in the open ground come in.

PLANT HOUSES.

Forcing Houses.—Another batch of Roses in pots—Teas and Perpetuals, and Moss Roses—may now be placed in this structure; and to ensure a good display of flowering plants during the early spring introduce a number of Rhododendrons, *R. fragrans* being very acceptable; Ghent Azaleas, not omitting *A. pontica*, so deliciously fragrant, the varieties of *A. mollis* being well suited for forcing; Kalmias, *Deutzia gracilis*, the double-flowered *Franca*, *Spiraea Thunbergii*, *Clematis* vars., *Viburnum plicatum*, with *Milea*, double Hawthorns, and a few plants of Sweet Briar. A few more plants of Azalea indicas should also be introduced. The flowers of the double varieties, such as *A. Borsig*, *Narcissiflora*, *Flag of Truce*, *Madame Charles Van Eckhaute*, *Roi des Belges*, and *Kaiser Wilhelm* last longer in a cut state than the single-flowered varieties. Lily of the Valley must be introduced in quantity, there not being any necessity at the period to subject the plants to bottom heat. Solomon's Seal is very useful for cutting, its

foliage and flowers are equally effective in vases. *Dialytra speciosa* is a fine plant for the conservatory, and its pendant bloom for vases has few equals. *Spiraea (Hotels)* japonica, with its feathery plumes of white, and the more brilliant pink *S. palmata* should be grown in quantity. *Richardias* must also be successional introduced to heat to ensure a supply of white spathes. All forced plants should be kept near to the glass and not subjected to a high temperature by artificial means, 55° being enough, giving a gentle syringing in the early part of the day and again in the early part of fine afternoons, so as to allow of their becoming fairly dry before nightfall, by which means the flowers will be finer and last longer. Hyacinths, Narcissus, Tulips, &c., will be brought into flower with less heat than earlier in the season, care being taken that they are not kept too warm nor too far from the light. If a few plants of *Lilium anatum* and *L. longiflorum* are encouraged with a little extra warmth they flower early and be very useful.

Greenhouse.—A few Fuchsias should now be started for early flowering. When growth has commenced the plants should be shaken out and repotted in turfy loam with a fourth of well-decayed manure and about a sixth of sand. The Erythrinas are much-neglected plants, but none are finer for decorating the conservatory. If taken out now and repotted in the compost advised for Fuchsias and placed in a brisk temperature they will flower during spring; and after that if allowed a few weeks' rest, then cut back, repotted, and started again, they will flower a second time in late summer. *Daphne indica* on account of its fragrance is most acceptable, but good plants are seldom seen. It is as a rule over-potted and over-watered, and does not receive as it requires an increase of temperature when making its growth. Suitable temperatures are 50° at night and 5° to 10° rise by day, syringing lightly overhead. If the pots are well filled with roots shift into others about 2 inches larger, employing turfy loam with a free admixture of sand. Croweas are fine for late blooming; any required for that purpose should have last year's growth cut back about half its length, potting such plants as require it, and placing them in a temperature as advised for *Daphne indica*. Heaths will now be growing freely, therefore any plants that require it should be potted at once. The hardwooded species and varieties will not require so large a shift as the others, and they succeed in peat of a harder texture. The quick-growing Heaths should never be allowed to become root-bound, or they will suffer afterwards. Where plants of a decorative character are required for halls and corridors few stand better than *Aralis Sieboldi*; and where there is a considerable demand a few small plants should be procured each spring for growing-on to succeed those which become too large, also of *Dracena australis*, *Yucca aloides variegata*, *Y. filamentosa*, *Y. angustifolia*, *Y. alba spica*, *Y. quadricolor*, and *Y. Stokessii*.

TRADE CATALOGUES RECEIVED.

H. Cawwell, Swanley, Kent.—*Illustrated Floral Guide for 1899*.
Bruzat, Boulevard St. Cyprien, Poitiers, Vienne, France.—*List of New Plants*.
William Strike, 62, High Street, Stockton-on-Tees.—*Catalogue of Flower and Vegetable Seeds*.
J. Weeks & Co., King's Road, Chelsea.—*Catalogue of Horticultural Structures and Designs (highly illustrated)*.

TO CORRESPONDENTS.

BOOKS (J. F.).—It will be necessary for you to explain more fully the objects you have in view in cultivating your garden before your question can be answered.

HOLLIES NOT FRUITING (S. M.).—You do not say whether the shrubs produce flowers or not; if they do and no fruit follows the probability is that your specimens are male varieties.

BOILERS FOR HEATING (R. F. J.).—We have many times stated that we do not recommend any particular boiler. Either of the boilers you mention will, if the pipes are properly arranged, heat your small house satisfactorily.

DESTROYING LICHENS ON FRUIT TREES (Nil Desperandum).—Not only the Mosses and Lichens which so generally affect fruit trees, but the eggs of insects, may be effectually destroyed by dressing the trees in winter with a wash composed of a saturated solution of soft soap and common salt or brine. The trunks and large branches ought to be first scraped with a scraper made of old hoop or any other implement that may be improvised for the purpose, and when all the scales of bark are removed apply the mixture with a painters' brush, working it well into the crevices. If the trees are old and exhausted the cleaning of the branches will not be sufficient for producing large fruit. Young trees especially should be kept free from Lichens.

SUBSTITUTE FOR GRASS (Idem).—We know of no satisfactory substitute for grass for forming lawns. Various dwarf-growing plants have been recommended for that purpose, and though answering for a season, they sooner or later become patchy; neither is it of any use sowing seed or planting in those patches, as all the nourishment has been extracted by the plants and they have died of starvation, and the same fatality will occur to other plants of the same kind that is sought to establish unless fresh soil is provided for their maintenance. It is different with grass, the roots of which die annually, are converted into humus, and form a medium of support for the new roots succeeding—hence the lasting character of grass lawns. If you have a dry slope that you wish to cover you may try the *Pyrethrum Schischewi*. It grows close and requires no mowing, but will only continue smooth and fresh for a year or two.

SEEDS (*A Subscriber of Twenty Years*).—We are sorry that we cannot recognise the seeds, and we have submitted them to experts who are unable to identify them.

GLASS FOR GREENHOUSE (*Constant Reader*).—For glazing a greenhouse there is no real difference in the two makes of glass you name. If you order 21-in. seconds from a glass merchant he will send what will answer your purpose admirably, indeed for all practical purposes as well as glass of a more expensive character.

CYCLAMENS (*K. O. B.*).—The persicum varieties of Cyclamens, and especially young plants, never grow so freely as when placed near the glass in a house having a genial temperature of about 60° by artificial heat in the daytime, 55° at night, and 70° or upwards with sun, increasing the moisture of the atmosphere as the temperature increases. When the plants are flowering they may be placed in the greenhouse or conservatory, but should not be exposed to dry cold currents of air. Plants will succeed in temperatures somewhat lower than those named, but they do not grow so freely nor produce such fine flowers. Remove the dead leaves from the Strawberries that are being forced, but do not pull them off roughly so as to injure the crowns.

VINE LEAVES SCORCHED (*J. C.*).—We think the injury to the leaves was not done in the night, but during the day previous, although you did not detect it at the time. Leaves so destitute of tissue are very liable to injury by a sudden gleam of sunshine after a prolonged period of dull weather, and Gros Colman is more prone to scorching than Black Hamburg. The evaporation from the leaves has been greater than the supply of moisture afforded by the roots, and hence the curling and shrivelling of the foliage. Until root-action is more active you had better shade the Vines slightly when the sun makes its appearance suddenly. The leaves will in time attain sufficient texture to render shading unnecessary, but this will not be the case until the roots are much more active than they are now.

OTTIEUS RACEMOSUS FLOWERS FALLING—ANTS (*A Constant Reader*).—Plants grown in the neighbourhood of London and very large towns where fog prevails often cast a great number of their flowers. The flowers also fall when the root-action of the plants is defective. If the soil has been allowed to become very dry at any time many of the feeding roots have probably shrivelled, and in that case the flowers are certain to fall prematurely. If the pots are full of active roots, as they should be, copious supplies of water are requisite, and weak liquid manure made from cow dung or soot applied in a clear state greatly benefits the plants. The other spray, No. 1, is *Libonia floribunda*. Ants are not easy to destroy, but diluted paraffin or carbolic acid sprinkled on their runs, not on the soil of flower pots, has a tendency to drive them away. Guano has also the same effect. They do not usually do serious harm unless they are very numerous and form nests in flower pots, but we have known them to eat the buds of Roses.

STRIKING CAMELLIA CUTTINGS (*Constant Reader*).—You cannot strike Camellia cuttings in heat in the way you propose. Cuttings are inserted in early autumn and kept in a cool close pit until they are callused, and are then placed in gentle heat to facilitate the emission of roots. Only cuttings of the strong-growing varieties are struck for providing stocks for choicer and weaker-growing sorts. Grafting is much the best mode of increase, but it can only be successfully performed by good propagators. Matricarias are hardly annuals and may be sown in the open ground in March, the seed being lightly covered with fine soil; or it may be sown in pots at the same period, the seedlings being transplanted in the open ground. Hardy herbaceous Statice may be raised in the same manner, but the greenhouse species require to be grown in a light position under glass.

TEA ROSES IN ROOM (*A Lover of Roses*).—We fear you cannot successfully grow Tea Roses in a room, as they will not have sufficient light and air, and will consequently grow weakly and produce poor flowers. The plants would be far better in a cold frame, the pots being plunged in ashes. A few rough boards nailed together and a glazed light placed over them would afford ample accommodation. If you require the plants to bloom this year you may train the shoots, if they are strong enough for blooming, around three or four sticks inserted in the pots; but if the growth is weakly, as we suspect it is, you had better prune the plants, cutting them down to within 6 inches of the surface of the pots so as to insure stronger growth and more numerous shoots. Rather than keep the plants in the room we would plunge them in ashes in a sheltered position out of doors until their blooms were about expanding, when the plants might be removed to a light window in the room if desired; a frame, however, is what you really require. As to your other question, so much depends on the plants and the season that it is impossible to say whether you will be able to cut good blooms on any given date. Strong healthy plants if planted in good soil and well attended to will bloom during the summer, but at what particular date no one can tell.

CAULIFLOWERS FOR SUMMER (*H. T.*).—The Walcheren is a good variety for successional sowings; somewhat dwarfier and earlier is the Dwarf Mammoth, which is a good selection of the Early Erfurt. More depends on the management of the soil and cultivation than on the variety for producing heads during hot weather. We have had the varieties named very good in the light soil of a dry district; but we gave the ground a dressing of salt in the spring at the rate of twenty bushels to the acre, and in summer covered the surface of the soil amongst the plants with manure to keep the roots moist. Veitch's Autumn Giant is a valuable variety. Plants raised from seed sown in March or April produce large heads in autumn.

GORSE CULTURE (*N. Wales*).—You will find a chapter on Gorse culture on page 228 of our last volume, which will afford you much valuable information. If you do not possess the number referred to it can be had in return for 1½d. in stamps, sent to the publisher, requesting him to send you No. 264.

EMIGRATION (*H. P.*).—We cannot advise, so much depends upon a man's capabilities and energy. Some emigrants succeed almost anywhere, while others fail almost everywhere. We do not know the wages usually given to gardeners in America, nor whether there is a demand for gardeners in the United States or Canada.

DESTROYING INSECTS ON PEACH TREES AND WALL (*S.*).—You will find in "Work for the Week" of our present issue a suitable mixture recommended for syringing the trees and wall. After the wall has been thoroughly syringed the loose mortar should be removed and the seams be freshly "pointed." It is impossible for anyone to advise on the old decaying Peach trees without seeing them. Cannot you obtain the advice of a practical gardener in the locality? We have seen old Peach trees cut down and after-

wards cover the wall quickly with healthy wood. If your trees are not too old and debilitated they may possibly be renovated by the same means; but you had better discuss the matter with a good gardener on the spot, and you will probably arrive at a right decision.

CINERARIAS AND PRIMULAS (*T. P., Wolverhampton*).—The flowers having been placed loosely in a dry box without any packing whatever were so shaken and withered as to preclude us saying anything as to their form and substance. The colours appear to be good.

NAMES OF PLANTS (*Alpha*).—7, *Pteris cretica*; 8, *Adiantum transformans*. The other scraps sent were wholly insufficient for identification.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

LAYING DOWN LAND TO PERMANENT PASTURE.

(Continued from page 106.)

THE next point to which we must refer is laying the land into form for the reception of the seed, having due regard to the nature and position of the soil. If we look to the strong soils in pasture in many counties, particularly in the midland districts in the case of flat-lying soils where the clay is of a uniform character, we find that the land is usually laid into large high-backed ridges, which are about 2 rods in width in some cases, the difference of the level between the top of the ridge and the bottom of the furrow being about 2 feet. This carries the rain water from the surface very quickly, and when pipe drains are placed in the furrows they are much more effective, and may be placed at wider intervals than upon level surfaces. In alluding to the high-backed ridges we are describing, a system which is almost universally adopted in some of the midland counties, we have noticed that nearly all the strong land pastures of Buckinghamshire, Bedfordshire, and Northamptonshire are laid out in these ridges, varying from the level from 2 to 4 feet, and the width of the ridges varying from 2 to 4 rods, according to the strength of the soil, and bearing evidence that they have lain in this manner for many years, and where a custom is so general we cannot well refuse to give it consideration. The plan applies, however, chiefly to flat soils, for we find in various parts of these counties, as well as in other districts, that where the pastures upon strong land are hilly that the ridges are small, and varying from 10 feet to 14 feet only. To this we hold a strong objection, for we often in such cases see rushes produced in the furrows between these small ridges, but we see none upon the ridges themselves, thus showing that had the land been laid level with sufficient water trenches or cross water furrows that no rushes would have appeared; besides which, there being so little loam or surface soil in the furrows, a very poor and scanty herbage grows therein. A strong objection, too, we find that when sheep are grazing in pastures with these small ridges and numerous furrows they are often found cast and lying upon their backs either dead or seriously injured, but it is seldom the case that they are cast when the furrows are either deep and decided or wide.

The preparation of the land for laying down into permanent pasture in our opinion is so important that we shall call attention to several modes of preparation, and having in our experience tried each of them we must say that one method will not apply with equal advantage to all soils and situations. We will take first a useful mixed loam, commonly called good turnip land, and by making a clean fallow for roots, and feeding them off upon the land with sheep eating good hay, cake, or corn, the land afterwards will be found not only clean but in a high state as regards manuring. These are certainly two great essentials; but next the question arises, Will it be better to sow the grass seeds in the following Lent corn crop or to wait and seed the land on a bare fallow? Practical farmers hold different opinions upon this point, but we incline to the seeding on the fallow, although we have for many years practised both plans with success. We will, however, first describe our mode of management when seeding with a corn crop, for we often seed the wheat land when it is clean and has been tilled and laid into ridges for the purpose. The time for doing this is in the first dry weather in the spring

when the surface will work kindly. Give a single tire of the iron harrows and roll with the ring roller, then sow the heavy seeds and light seeds separately; after seeding, the land should be harrowed twice with the steel chain harrows made by Howard of Bedford, and then as a last operation roll with the ring roller. In the event of seeding in the Lent corn the seeds are best sown at the time of sowing the corn, and sowing the seeds at twice, following the ring roller, the after work being as described.

The chief advantage to be derived from seeding with corn is that very few weeds arise to injure the seeds, and those which are found are cut together with the corn at harvest, and all the coarse grasses which have become strong will also be cut down, leaving the finer grasses after harvest to make a fair start in their autumnal growth. After harvest no weeds will injure the young grass for that season, nor should it be fed off by stock unless the growth is very luxuriant, in which case it may be fed off by young cattle only, but not by sheep under any circumstances. We have sometimes known the seeds sown with buckwheat or rape, the object being to feed them off together with the young grass seeds with sheep, for the ostensible purpose of manuring and benefiting the land by the sheep dressing. This mode has not found much favour with practical farmers, for although by not allowing the sheep to lie back upon the land and only give them a fold daily, it is found that the sheep eat out the best herbage and young succulent clovers and the best and finest grasses in preference, and thus injure the succession. In seeding on a fallow surface it is often attempted after feeding off green crops, such as vetches, trifolium, rye, and rape, but when sheep have fed off these crops on the land, and the weather has been wet during portions of the feeding time, it has been found that the land has been trodden and made very dirty on parts of the field. When the land is ploughed afterwards and intended to be seeded with grass seeds these parts will work very rough and unkindly; and although the sheep will have manured the land well, yet the surface will prove so rough and cloddy, especially upon strong parts of the mixed soils, that the grass seeds seldom take well; and it often happens that they have to be renovated and resown on certain portions of the fields, thus increasing the expense, and perhaps for a long time after only furnishing a patchy and irregular plant and growth.

We must now refer to the practice of seeding on a fallow tilth. We have often practised this plan and succeeded admirably upon all soils when the seeding has been done on the fallow, and we advise the home farmer to adopt this system in preference to any other. It is not of much consequence what have been the preceding crops, except that of old lea or land broken up out of waste or inferior pasture, in which case the land will require a course of corn cropping for a few years or paring and burning, or otherwise a two-years growth of root or green crops consumed by sheep upon the land. It is of great importance in commencing the fallow process that it should be previous to the winter months, in order that the various changes of weather in the winter season may have full effect in ameliorating the soil, and also in destroying numerous insects, particularly slugs, which are very apt to feed upon and injure the young grass plants when they first appear. The land, too, will then be sure to turn up stale and mellow when cultivated in the spring, which is of great consequence to the grass in its early stages of growth. We have sown grass seeds with success at all periods of the season from April to the month of September; but there is one leading point to be observed at either early or late sowing—Be sure to have the land in a sufficiently moist state for the seed to germinate immediately. If it is too dry for the grass seeds to grow directly they are sown it must be remembered it is never too dry for weeds to come up, particularly certain annuals, and as they will continue growing if the weather proves either wet or dry it has a very injurious effect upon the young grass. We have frequently seen the land so dry at the time of sowing that the seed could not possibly germinate, and we have also known the dry weather continue long enough to allow the weeds to get possession of the soil, and so injure the young grass plants when they appeared that they were eventually very patchy or irregular, and the land had to be resown either wholly or in part, thus causing the delay of one year's growth. Upon certain soils very subject to weeds we have found it a good plan to work the land very fine and leave it for the seeds of weeds to germinate, and then to destroy them by the scarifier immediately before sowing the grass seeds. As soon as the young plants are established and are strong enough to bear it the ring roller should be run over the field, and any bare spots or patches should be sown just before the roller. It must also be remembered that weeds indigenous to the soil will appear, including docks and thistles. The latter should be cut out with the weed hook or spud, after which the remaining weeds of various sorts, such as charlock, &c., may be mown off. These may then, together with the forward stalks of grass, be removed for feeding cattle and swine.

(To be continued.)

WORK ON THE HOME FARM.

Horse Labour.—So far as cultivation of the land has been concerned horses have been but little employed in consequence of the

long continuation of frost. We therefore urge the home farmer to anticipate every kind of horse labour which will be required during the next two or three months. Repairing farm roads may now be done, also carting and heaping earth should always fill up any leisure time to prevent the horses being idle. Carting dung on to clovers and pasture land will be going on where it has not been completed. Chalk or marl carting is at all times laborious work for the horses, and may well be done during frosty and dry weather, when the labour will be comparatively light. The threshing and delivery of corn is done with the greatest economy at this time of year when the tillage of the land cannot be carried on. The odd horse or horses may be advantageously employed in carting roots from the store heap to the root house to be daily prepared for the dairy cows and fattening cattle, and this leads us to consider a very important point in economising labour connected with the preparing of food for cattle, such as cutting roots, chaffing hay and straw, grinding and crushing corn and cake. On all those farms where a considerable number of animals have to be provided for daily, steam power should be employed—either a small engine expressly adapted to the work, or otherwise one of the engines used for steam cultivating may be made available. During a leisure time for workmen large quantities of hay and straw may be cut into chaff and stored away for use, and will certainly be improved by keeping it if it is spiced with Bowick's flavourer at the time of its being cut into chaff. The fact of the hay of last year's growth having been seriously injured by the weather makes it more than ever desirable that spice should be used, and the same point we insist upon in the use of straw, because good straw never has an enticing aroma like good hay, and should therefore when intended for cattle food be either spiced at the time of rickling, when threshed, or else at the time of cutting into chaff.

Hand Labour.—This will still consist of filling dung carts, spreading manure in the field, also filling and spreading chalk, as well as the labour attached to gravel carting for the repair of roads. Now the men are at leisure let the rick yards and all parts attached to the homestead be kept clean, taking care that the water does not remain anywhere in puddles, and in order to prevent this the surface of the yards and premises should be so arranged that the water tables should be efficient for carrying away surface water, and properly laid with good binding gravel to bear the traffic of horses, carts, &c., at all times. The home farmer should bear in mind that this matter goes very far in obtaining the favour of their employers, especially of noblemen and gentlemen, many of whom are very particular, and pride themselves upon having the homestead and roads well kept at all times. Men should be employed as soon as the weather is open in digging and manuring the beds for sowing with cabbage seed to obtain plants for planting out in the summer and autumn. As some of these crops will or may be required for sale, as well as for consumption upon the home farm by stock, it will be well to grow all the varieties, including broccoli and kohlrabi. The varieties of cabbage will be for the earliest season the Imperial or Enfield Market, next the Early Oxheart, the Champion Drumhead cattle cabbage, the large Drumhead Savoy, and the common dwarf Savoy. The last variety comes in well in the spring, particularly when the plants are ploughed-in or spade-planted after winter oats, rye, or white oats of the early sorts, for at the present time such Savoy cabbages are extremely scarce and dear, showing that in case the home farmer has been cultivating them that they would be worth far more for sale than for consumption by stock on the farm. Other winter vegetables, such as the Thousand-headed cabbage and curled Scotch kale, must have attention. The latter we have grown for many years in preference to rape, for it is so much better for the sheep. In sowing seeds of the sorts we have referred to they should be sown in February and August, so that there may always be some good old strong plants available, because when they become long and wiry in the stem they may be planted in the driest of summer weather if ploughed in or set with the spade. All such seeds should be drilled by the hand drill at about 16 inches between the lines, in order that hand-hoeing and weeding may be done. It also facilitates the pulling of plants without injury to those remaining, and these are often some of the best and strongest plants when kept over year or until later periods. The feeding of ewes which are about to lamb is very important, and as roots are scarce they may well be held in reserve for them until they have dropped their lambs. The hay and straw spiced, cut into chaff, and mixed with cotton cake meal will keep them in the best condition at a moderate expense. Large numbers of the Down flocks are now lambing, and the ewes should have half-a-pound cake a day in meal and the same quantity of thin wheat mixed with a small quantity of roots and the best clover hay. The lambs should not be allowed to go to the field with the ewes until they are well able to follow them.

CANADIAN AGRICULTURE.—No. 1.

THE reports of the tenant farmers' delegates on the Dominion of Canada as a field for settlement, that have just been published by authority of the department of agriculture of the Government of Canada, may be perused with advantage by all interested in

the cultivation of the soil. They afford a clearer insight into the agricultural resources of the Dominion than we have seen in any other form, and each delegate has done well and conscientiously the work which he undertook to perform. They have one and all evidently observed closely, worked assiduously, and recorded their opinions candidly; and thus the collected reports, which form a closely printed blue book of 140 pages, teems with information that may be fairly considered reliable.

The origin of the agricultural pilgrimage, as is stated in the introduction, is as follows:—"The Hon. J. H. Pope, the Minister of Agriculture of the Government of Canada, caused a number of delegates representing tenant farmers in the United Kingdom to be invited to visit the Dominion in the autumn of 1879, for the purpose of examining its resources and reporting on its suitability as a field for settlement. In accordance with such invitation the following delegates visited Canada:—Mr. Biggar, The Grange, Dalbeattie, Kirkcudbrightshire; Mr. Cowan, Mains of Park, Glenluce, Wigtownshire; Mr. Gordon, Comlongon Mains, Annan, Dumfriesshire; Mr. Elliott, Hollybush, Galashiels; Mr. Logan, Legerwood, Earleton, Berwickshire; Mr. Snow, Pirntaton, Fountain Hall, Midlothian; Mr. Hutchinson, Brougham Castle, Penrith, Cumberland; Mr. Peat, Lees House, Silloth, Cumberland; Mr. Irving, Bowness-on-Solway, Carlisle; Mr. Wilken, Waterside of Forbes, Aberdeenshire; Mr. Bruce, Aberdeenshire; Mr. Wallace, Nithsdale; and Mr. Welsh, Eskdale. These gentlemen were clearly informed that their own judgment should be freely exercised and entirely unfettered, and that it was simply desired to obtain from them the results of their own personal observations, as well with respect to drawbacks as advantages. The motive for thus inviting delegates and affording them facilities to see every part and province of the Dominion, in so far as practicable within the limit of time at their disposal, was to obtain testimony as respects the objects stated, which should not be open to the kind of question that might attach to any statements whatever coming from Canada, no matter on what authority they might be made. The reports now published have been made by the delegates to their respective constituents, and have been handed to Mr. John Lowe, the Secretary of the department of agriculture of the Government of Canada, who has visited this country for the purpose of receiving and publishing them. This has only been done after careful revision by the delegate responsible for each."

The first report is that of Mr. Biggar, which is exhaustive, yet concisely written, and occupies twenty pages. It refers to the aspect of the country, condition and value of the land, farm stock, extent of holdings, cost and value of crops, machinery, implements, labour, &c. A few extracts will show the nature of the report, thus:—"Draught horses were not a large or important class, few showing any Clydesdale character, but were more after the type of van horses in England. The Canadian general purpose horse is required to combine activity and pace with draught, and is similar to the general run of Irish horses." Cattle feeding is represented by the practice of a butcher, who "feeds a hundred head annually, buying three-year-old steers in spring at about £6 per head. He gives the cattle when on grass about 100 lbs. each of meal mixed with salt, and considers that £3 a head pays him for grazing. He ties up the cattle at 1st of November and feeds till May, buys Indian corn, and chops and steams all the food. He allows daily about 8 lbs. meal per head, and increases it to 15 lbs. at the finish. The bulls cost £4 each in spring, and some bullocks bought recently £9. The bullocks were strong and in good condition, but lacked quality. I valued them at £18 a head in our market. If they had been better bred they would have been worth 30s. more. He expected to make his cattle worth £16 to £17 in May, and estimated the cost of sending them to England at £7 10s. each. Since the exportation of fat cattle to England began prices had advanced—steers costing 50s. to £3; two-year-olds, £4 to £6; and three-year-olds, £6 to £7." Again, "We crossed the Red River at Fargo—a rising place, and twelve miles farther sighted at Mapleton Station, situated on the Maple Farm, and surrounded by boundless prairie as far as the eye could reach. We found our visit to these farms very useful, as we there got details of the cost of cultivating wheat on a large scale, which we could not have got on as good authority in Manitoba, but which are applicable to that province. We had about 1000 acres in crop last year, part of it raised on shares and part by our own cultivation. Farming on shares we pay the tenant the cost of first breaking—2½ to 3 dollars per acre—(dollar, equal 4s. 2d.; and cents, equal 4d., or 100 cents dollar); and seed, 1½ bushel per acre, lend steam thrasher, and pay taxes, receiving one-half of the produce; the rent paid by a 20 bushel crop being about 4 dollars per acre. We also calculated cost of producing an acre of wheat and value of produce as follows, the farm being close to a railway station:—Produce, say 20 bushels at 70 cents, \$14.00. Ploughing, sowing, harvesting, &c., \$6.50; seed, \$1.50; rent charge, 8 per cent, \$1.00; interest on plant, \$1.00. Total, \$10.00. Profit, \$4.00." In Ontario Mr. Biggar "heard very different statements of the yield of wheat, varying from 25 to 40 bushels. McLean, a farmer near Portage, had 1230 bushels of Fife wheat off 40 acres. Another man, a native of Ross-shire, who was ploughing his own land, stated that he

had cropped it for seventeen years in succession, his last crop yielding 36 bushels per acre. Mr. Ryan, M.P., a good authority, said the average of wheat might safely be taken at 25 to 30 bushels 68 lbs., and of oats at 60 bushels 34 to 38 lbs." Cheesemaking is noticed at Mr. Ballantyne's factory. "They receive the milk of a thousand cows, and make fully a ton of cheese daily. The cows yield most milk in June, some 26,000 lbs. daily, producing 2600 to 2700 lbs. of cheese. The worst yield is in July. The milk is richest in October, when 8½ lbs. of milk will yield 1 lb. of cheese. Farmers sending milk to the factories do not as a rule feed their cows highly, and consider £6 per cow a fair return for the season. Mr. Ballantyne said it would not pay them to make good cheese under 5d. per pound." And "sheep in Canada are not affected by scab, foot rot, or murrain."

Mr. Biggar states that "as a field for money-making and enterprise we consider the north-west decidedly the best part of the Dominion, and those who are willing to face these difficulties and disadvantages of pioneer life—difficulties and disadvantages which will be rapidly overcome, and which are nothing to those which the early settlers in Ontario had to contend with—have every prospect of success and independence." He concludes his report by observing that he does "not advise people who are doing well at home, with a prospect of providing for their families, to change; but those who are working for nothing, and especially those who have a working family, need have no hesitation in going to Canada. They will find in many parts of it as good farmers, as good houses, as good schools, and as good neighbours as they have here. They will also remain under the British flag. Canadians are proud of their territory in the North-West, and proud of their connection with this country. With regard to working men without any capital I think ordinary labourers are as well off at home; but skilled workmen are well paid, and intelligent men with rising families could improve their position and give their children a better start in life. In all classes industry, economy, and intelligence are essential to success."

CLOVER FOR THE DARTMOOR HILLS.

It is common with a large number of Dartmoor farmers I should be very glad to know the best hardy perennial kinds of clover most suited for our hills of rotten granite soil at an elevation of about 500 feet above the sea level. I imagine some of your readers may have had experience in growing the permanent or perennial clovers on the granite hill soils in high situations, and their practical experience on this point would be much valued by—
—A DARTMOOR EXPERIMENTER.

REVIEW OF BOOK.

Permanent Pastures, their Formation and Improvement. By MARTIN H. SUTTON, M.R.A.S., F.R.H.S., &c., of Reading.

THIS paper—which first appeared in the Royal Agricultural Society's Journal, and afterwards published in pamphlet form—has reached in this form its twelfth edition. The present issue is an elegant one, and has been revised and enlarged by Mr. Martin J. Sutton. It contains a portrait of and a preface by the author, and well-executed engravings of the most useful grasses and forage plants.

We cite the following, relative to the steady increase of the area of pasture lands in this country:—"All the great authorities of the present day on agricultural matters concur in one thing at least, however widely they differ in minor matters—viz., that a very large proportion of heavy, hilly, and otherwise unprofitable arable land must immediately go into grass.

"By a glance at the following figures, taken from the Agricultural Returns for Great Britain, it may be seen that the transition has commenced, and is going forward quietly but surely:—

	Arable.	Pasture.
1874	13,570,000 acres	10,438,000 acres
1875	13,570,000 "	10,537,000 "
1876	13,515,000 "	10,699,000 "
1877	13,454,000 "	10,868,000 "
1878	13,408,000 "	11,010,000 "

"Whether this change takes a permanent form, and land is laid down to grass once and for all, or whether the plan adopted be that adverted to in the latter part of this work under the heading of "Alternate Husbandry," in either case it appears that a change is not only inevitable but desirable. Nor need there be any fear that it will be carried to excess, or prove detrimental to the general prosperity of the country. It is true that land in grass will not produce the same gross return as that under the plough; but then it must be remembered that the capital required being smaller, and the expenses less, the nett return may be considerably greater."

The practical matter is varied, sound, and reliable. The different modes of forming pastures are detailed with instructions for preparing the land, sowing seed for new pastures, and breaking and renovating old; indeed, it contains information, imparted in

a clear and concise manner, on every phase of the subject on which it treats.

POULTRY NOTES.

THE STEAM HATCHING COMPANY.—We have the prospectus of a company with (in this country) somewhat novel objects. The Steam Hatching Company is this month about to commence operations at Bedhampton, near Havant, Hants. The Company proposes to hatch eggs for poultry keepers at a fixed tariff, and to tend the chickens to their owners in heated boxes. It also will supply chickens thirty hours old of many breeds at various prices per hundred. The idea has doubtless been suggested by the success of M. Rouillier of Gambais, near Houdan in France, who last year hatched 45,000 chickens and dispatched a large portion of them when a few hours old in all directions. We shall be interested to watch the result of the venture, and to see whether, in the first place, the Company succeeds in hatching a sufficiently large percentage of eggs to encourage fanciers and breeders to entrust their eggs to its care; and, secondly, whether chickens can without detriment go journeys in boxes through their early hours. We have always before been told that eggs which have travelled will not hatch in incubators. How far this theory is founded on fact may be proved by the result of this new experiment.

LA FLECHE FOWLS AT PARIS.—Several English fanciers visited the late Paris Poultry Show in the Palais de l'Industrie. They report that as usual the La Fleche classes were magnificent. We cannot think, as we have said before, why there is a prejudice against this breed in England, and much wish that some fanciers who live in tolerably dry and warm places would give it a fair trial.

POULTRY PRIZES AT THE LATE DAIRY SHOW.—A curious dispute arose concerning the first prize White Leghorns at the late Dairy Show. The class was judged and the prizes given. Subsequently the first prize was taken away from the pair to which it had originally been awarded and given to a pair which were not in the catalogue nor penned with the rest of the class. We hear that the Council of the British Dairy Farmers' Association have given a decision in favour of the original winners.

WHITE HOUDANS.—We observed at the Wolverhampton Show last week a pair of White Houdans. They reminded us of some fine-bodied White Polish which we remember years ago in the north of England. Their combs, however, and fifth claws showed that their relationship to Poles can only be remote.

THE HATCHING OF CHICKENS.—We hear good accounts of the hatching of chickens from those who are fortunate enough to have any already. We would strongly recommend our readers to feed theirs upon the system we have often described, and not to pamper them. Stimulating diet should be reserved for the trying time of the spring east winds.—C.

VARIETIES.

THE ANNUAL SHOW OF THE PETERBOROUGH AGRICULTURAL SOCIETY will be held at Peterborough on Tuesday and Wednesday, June 16th and 16th. Entries close on May 21st. Earl Fitzwilliam, K.G., is President of the Society, and Mr. J. E. Little, Queen Street, Peterborough, the Secretary.

THE Handel Festival, 1890, will be held at the Crystal Palace this summer under the joint auspices of the Crystal Palace Company and the Sacred Harmonic Society, and has been fixed for June 18th, 21st, 23rd, and 26th.

THE ANNUAL GENERAL MEETING OF THE MEMBERS OF THE BRITISH BEE-KEEPERS' ASSOCIATION will be held in the Board-room of the National Chamber of Trade, 446, Strand, London (opposite Charing Cross Station), on Wednesday, February 18th, at 4 P.M., under the presidency of the Baroness Burdett Coutts, the President of the Association.

THE COUNTIES OF BERKS AND BUOKS now have their own Bee-keepers' Association. A meeting has been called, which was more influentially than numerously attended, resulting in the organisation of the Association. W. H. Harris, Esq., has accepted the hon. secretaryship, and it is already in contemplation to arrange for shows in connection with local floricultural exhibitions, while the villages of the counties are to receive attention at gatherings called under the auspices of the local clergy. These county associations have increased in number with a rapidity which is astonishing, and which demonstrably shows that apiculture is fast gaining a firm footing in the country upon a basis which augurs a quick displacement of those systems which nothing but ignorance has perpetuated until now.

AMERICAN AND CANADIAN FOOD.—The arrivals of live stock and fresh meat from the United States and Canada last week were considerably above those of the previous weeks. The totals being 1901 head of cattle, 201 sheep, 158 pigs, 12,467 quarters of beef, 2226 carcasses of mutton, and 409 dead pigs.

THE GREAT MORTALITY AMONG SHEEP.—The ravages of what is commonly known as "rot" or "bane" are assuming most appalling proportions in the midland and western counties, in

consequence, it is generally supposed, of the excessive and long-continued wet weather last year. Thousands of sheep, principally ewes, are dead and dying. In some parishes in Gloucester, Oxon, and Warwick there are comparatively speaking very few sheep left, and in Somerset there are only five thousand left in one district, which usually winters fifty thousand. Hundreds, if not thousands of sheep, have been sold off in the Bristol district at from 8s. 6d. to 10s. a head; and we hear the same reports from other centres in the west and the midlands. This is becoming a matter for the serious consideration of wool staplers.—(*Wool Trade Review.*)

THE BRITISH BEE-KEEPERS' ASSOCIATION.

THE REPORT AND BALANCE SHEET OF THIS ASSOCIATION show that the Society is in a healthy progressive state. There is a cash balance in hand of 249 16s. 4d., and stock, medals, &c., bringing the amount to £102 12s. 6d. Special attention is directed to one of the original rules of the Society:—"That as soon as the funds of the Association will permit, the Committee shall endeavour to carry out the objects of the Association by means of lectures, meetings, the circulation of suitable books, certificates, sending out experts as qualified teachers and examiners of apiaries; by spreading a knowledge of all improvements and best possible methods of bee-keeping, and of the most profitable use and disposal of bee produce; establishing a model apiary, with an apian museum and honey market; assisting in the formation of provincial clubs affiliated with the Association, and generally doing all in their power for the advancement of apian science." The report states with much truth that "although much has been done by the Association since its establishment towards improving the knowledge of bee culture a very great deal of work still remains to be accomplished. In many parts of the United Kingdom great superintention in regard to bee-keeping still prevails, and many thousands of stocks of bees are annually destroyed in the most cruel and wasteful manner." A set of valuable diagrams is in preparation, and "the Association intends to apply to the Science and Art Department of the Committee of Council on Education for an introduction of these diagrams to the schools in Great Britain, about 1800 in number, in connection with that department."

The following county Associations are affiliated with the parent Society:—Dorsetshire, Devonshire, Hertfordshire, Lincolnshire, Nottinghamshire, Shropshire, Surrey, and West Kent. The Baroness Burdett Coutts is the President of the Association, and the Rev. Herbert Peel continues to discharge his duties as Secretary with great efficiency.

THE PHYSIOLOGY OF THE HONEY BEE.—No. 3

HAVING shortly described the anatomy of the honey bee, let us now turn our attention to its wonderful instincts.

Social Instincts.—These have already been referred to as distinguishing it from others of its genus. Each inmate of the hive seems to feel as if it were only a part of the body. Remove it from its companions, and it at once becomes restless and eager to return. If its hive be removed it will hover around for hours if not previously chilled, and will at last seek admission to any other colony that may be in the neighbourhood. All its other instincts are subordinate to this. Break up a colony by removing the hive and queen, leaving the driven bees behind, and they seem to have lost all their other instincts. Having no centre of unity, they will soon either disperse in quest of another hive, or perish on the spot without any attempt to provide for themselves. If the queen only be removed their instinct leads them to adopt means for replacing her. They will raise a new queen from any egg or larva that may have been left in the hive or supplied to them. Should no such means of securing a successor be found, they may continue to work in a listless manner for a short time, and even store both honey and pollen, and defend themselves from attack; but in such cases their instinct, wonderful as it is, is often at fault. They will attempt to rear a queen from drone brood, will build royal cells, and stuff them with pollen for want of egg or larva, or will recognise any worker bee as queen that happens to have developed the power of laying a few unfertile eggs. In such circumstances their instinct becomes so perverted that the bee-keeper has great difficulty in overcoming their repugnance to any true queen offered them. Such cases are, however, rare and abnormal.

Colonising Instinct.—This seems at first sight to be opposed to that of sociality, but it is really a necessary feature of it. Without it the race would in a few years become extinct. Many colonies would perish annually from starvation, disease, or the death of a queen at a season when she could not be replaced. To guard against such disaster the desire for swarming has been implanted. Young queens are reared. The old one leads off a colony; in a few days the first hatched princess follows with a second; next with a third, and so on until the stock is sufficiently reduced to occupy its old home in comfort. The remaining princesses, all but one, are killed, and thus our

one stock has multiplied to three or four. This phenomenon is so well known that it need not be further described. Bee-keepers should, however, observe that here also instinct is occasionally at fault. It is not uncommon for bees to swarm out and leave the hive tenantless. This generally happens in spring, and is sometimes a result of approaching starvation. More generally, however, it is caused by the sudden arrival of warm sunshine after a period of cold. Glad of the opportunity of getting an airing, the bees become quite excited; the queen catches the excitement and also sallies forth, and, not marking her location, she is as likely to alight upon some other hive; and, the bees following her, the old stock is forsaken. There may be both honey and brood left behind. Such cases rarely happen, except with weak colonies. Again, a false alarm frequently causes colonies with virgin queens to swarm out. The princess goes forth to seek the drone, and we have frequently seen a swarm issue with her. When such happens with an old stock that has already thrown all its normal swarms there is seldom much harm done. The virgin queen marks her location and returns. Sometimes the swarm returns immediately, but more frequently it clusters on a bush. When it is discovered that the queen is not with them the bees return within half an hour or so. Certain stocks will repeat the delusion day after day, but as there will generally be sealed brood and lots of newly hatched bees left at home, and as the queen issues without any notion of swarming, but with every precaution for her safe return, there will seldom be any bad result. The case is quite different with colonies that are themselves swarms of the season. Having little or no comb built, and no brood to require attention, if they come out at all with the queen on her making flight they generally come *en masse*. The queen may return, but, finding an empty hive, she flies off to join the vagrants. Very often in such cases they all go to parts unknown. It is a safe rule for bee-keepers to provide every swarm with a comb of brood in all stages the very hour it is hived.

It is well also that bee-keepers should bear in mind that the clustering of swarms on trees and bushes is not exactly a natural instinct, but a habit largely due to domestication. I suspect the natural instinct is to go directly to a hollow tree or other cavity previously selected and prepared. In most cases the clustering is merely temporary, or until scouts select the new abode. No time should therefore be lost in securing the swarm and supplying it with a comb of brood as above directed. The scouts may return and endeavour to create anew the emigration fury, but in such a case they will seldom succeed. I have, however, seen a swarm that must have hung on a gooseberry bush for three weeks. It had three combs from 6 to 12 inches long, with sealed brood and honey. This anomaly happened, too, within a few hundred yards of a mansion, the roof of which was yearly a favourite resort of swarms.

The foregoing observations make it plain that much of the success of bee-keeping will depend on the ability of the bee-keeper to bring reason to the aid of instinct. Bees kept on the let-alone system may seem to thrive for a time, but sooner or later calamities will occur which a little forethought on the part of their owner might have prevented. He should learn to assist those instincts that tend to his and their welfare, to control those that in the circumstances might be fatal to both, and to meet such cases of faulty instinct as we have indicated by their appropriate remedies.—WILLIAM RAITT.

BLACK VERSUS LIGURIAN BEES.

HAVING studied closely the habits of bees for a long time, and having kept and experimented with them successfully for the last eight years, it may not be out of place to offer a few observations on the Ligurian.

A hive of Ligurian and a hive of blacks, from their very natures, cannot be placed within a few yards from each other on equal terms, and the reason is obvious to every intelligent observer whether bee-keeper or not. All Ligurian fanciers claim for them that they work in wet or dry earlier and later than do the blacks. Now any one can see that as soon as there is honey in the flower so soon will the black bee go for it, and so long as there is honey so long will the black remain gathering it. Since the Ligurian can no more make honey than the black, and since it finds honey after the blacks have failed, it must obtain it from some other source than the flowers. Ligurian bee-keepers tell me—and I see no reason to doubt the statement—that the Ligurian thrives amazingly for a time where plenty of black bees are kept, and that nearly in the same proportion to the number of black hives within reach, so will be the honey-producing power of the Ligurian. I have often seen them coming out of the black hives, and certainly they were not helping the blacks, because in nearly exact proportion as they increased in weight the blacks decreased; and this transfer of the honey is not always accompanied with fighting, the Ligurian having what all successful pilferers generally have—viz., the knack of introducing themselves unchallenged anywhere if what is wanted is to be had.

It was now a good while since first these persistent marauders were imported, and from their swarming propensities (I should

have said that their breeding powers are said to be immense), and the number of swarms and queens sent annually over the country, one wonders how there can be such a thing as a pure black. Doubtless there would not by this time were it not for the Ligurian's liability to disease. Every now and then I read in the newspapers that such an one has imported a Ligurian swarm or queen. After a while I read that the Ligurian is shooting far ahead of the blacks; again a short time and I read that the Ligurians have got foul brood. After a time I hear that the Ligurians are dead after having infected a whole district with this abominable disease. Pure blacks are very rarely troubled with this or any other disease.—ROBERT GORDON (in the *Banffshire Journal*).

OUR LETTER BOX.

BROOD AND HONEYCOMBS—FINDING QUEEN (T. K.).—The cells which contain honey can always be distinguished from those that contain brood in two ways; first the lid or waxen covering of the latter is always evenly convex or dome-shaped, while honey cells when sealed up are irregularly flat or concave. Secondly, brood is covered in with a richer brown wax, while the honey cells are sealed in with a purer and paler material. The queen bee is usually found where the bees are most thickly congregated, and she has a knack of burying herself among them, so that it often requires a quick and experienced eye to detect her. If you are quite satisfied that the combs which contain the sealed cells are filled with brood, which they are pretty sure to be if they are in the centre part of the combs over against each other, you should begin to feed at once. If there are no sealed honey cells at the top or sides of the combs your bees are probably very near to starvation, especially if they have brood in three combs, which is a large quantity for this time of year; but if the cells you describe are filled with honey you need not begin feeding till March; but we advise you to watch how it goes, and to feed accordingly, only taking advantage of the warmest days for the purpose when the bees are in motion.

CORN AND SEED SCREEN (G. H. Browne).—Write stating your requirements to Messrs. Perkins, Paternoster, & Burlington, The Iron Works, Hitchin, who, we think, can supply what you need.

ERRATUM.—In Mr. Cheshire's article on the new section frame-hive last week the words in the second column, line 30, for "replacement of the supers" read replacement of the drawing pins.

METEOROLOGICAL OBSERVATIONS.

CAMPDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

Lat. 31° 33' 40" N., Long. 6° 5' 0" W., Altitude, 12,110 feet.

DATE.		9 A.M.					IN THE DAY.					Rain.
1899.	Feb.	Barom. at 35 inches and Sea Level	Hygrome- ter.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature.			
			Dry.	Wet.			Max.	Min.	In sun.	On grass.		
											Inches.	
Sun. 1	30.541	51.5	51.0	N.	32.0	43.5	32.5	75.3	23.4	—	—	
Mo. 2	30.331	51.0	51.0	N.	32.0	42.8	37.0	53.0	23.3	—	—	
Tu. 3	30.444	40.5	40.5	S.S.W.	32.0	41.7	30.5	49.7	23.3	—	—	
We. 4	30.408	51.9	51.8	N.N.E.	32.0	43.5	30.3	43.0	23.4	0.000	—	
Th. 5	30.141	39.5	39.5	S.W.	32.0	43.7	27.5	52.3	31.0	0.004	—	
Fri. 6	29.986	43.3	43.0	S.S.W.	32.1	44.5	29.3	50.3	31.0	0.004	—	
Sat. 7	29.708	46.9	46.5	S.W.	32.3	47.5	43.6	49.6	39.5	0.413	—	
Means.	30.183	46.4	46.3		32.1	44.6	30.3	55.6	27.6	0.546	—	

REMARKS.

- 1st.—White fog in morning, clearing off at 10 A.M., brilliant sunshine for several hours; very foggy after 5 P.M.
 - 2nd.—Thick fog in morning, clearing by noon, sunshine at intervals and clear sky; cloudy evening.
 - 3rd.—Fair day, much warmer, but misty; clearer in evening.
 - 4th.—Thick white fog in morning, sun visible greater part of the day; thick fog in evening, clearing at intervals; quite clear at 11.30 P.M. and stars shining.
 - 5th.—Misty cold morning, very fine, and bright sunshine from 10 A.M.; clear sky at sunset, misty evening; slight rain at 10 P.M.
 - 6th.—Very dull and damp, no sunshine; wind rising in evening; a little rain at night.
 - 7th.—Dull and overcast throughout the day with drizzling rain; rather heavy about 11 A.M.; slight breeze in evening.
- The long period of drought, high barometer, calm, cold and fog has at last been interrupted by a spell of weather the reverse in nearly every respect.—G. J. SYMONS.

COVENT GARDEN MARKET.—FEBRUARY 11.

MARKET very quiet. Supply short and irregular; good samples of late Grapes will now be in demand.

VEGETABLES.

VEGETABLES.				VEGETABLES.			
		s. d.	s. d.			s. d.	s. d.
Artichokes.....	dozen	3	0 4 0	Mushrooms	pottle	1	10 0 0
Asparagus.....	bundle	10	0 15 0	Mustard & Cress	punnet	0	6 0 0
Beans, Kidney....	100	3	0 2 0	Onions.....	bundle	3	0 0 0
Beet, Red.....	dozen	1	0 2 0	Pickling.....	quart	0	0 0 0
Brocoli.....	dozen	0	2 1 0	Parsley....	dos. bunches	0	0 0 0
Brussels Sprouts	1/2 sieve	8	0 3 0	Parsnips.....	dozen	0	0 0 0
Cabbage.....	dozen	1	6 2 0	Peas.....	quart	2	0 0 0
Carrots.....	bunch	0	4 0 0	Potatoes.....	bundle	4	0 0 0
Capsicums.....	100	1	6 2 0	Kidney.....	bundle	1	6 0 0
Cauliflowers.....	dozen	3	0 4 0	Radishes... dos. bunches	0	6 0 0	
Celery.....	bundle	1	6 2 0	Rhubarb.....	bundle	1	0 0 0
Coleworts.....	doz. bunches	2	0 4 0	Salsify.....	bundle	1	0 0 0
Cucumbers.....	each	2	0 2 0	Scorzonera.....	bundle	1	0 0 0
Endive.....	dozen	1	6 2 0	Seakale.....	basket	2	0 0 0
Fennel.....	bunch	0	3 0 0	Shallots.....	1 lb.	0	6 0 0
Garlic.....	1 lb.	0	6 0 0	Spinach.....	bundle	5	0 0 0
Herbs.....	bunch	0	3 0 0	Turnips.....	bunch	0	0 0 0
Leeks.....	bunch	0	6 0 0	Vegetable Marrows	each	0	0 0 0

WEEKLY CALENDAR.

Day of Month	Day of Week	FEBRUARY 19-26, 1880.	Average Temperature near London.			Sun Rises.	Sun Sets.	Moon Rises.	Moon Sets.	Moon's Age.	Clock before Sun.	Day of Year.
			Day.	Night.	Mean.							
19	TH	Royal Society at 8.30 P.M.	44.9	31.0	37.9	7 9	5 19	10 34	3 59	9	14 7	50
20	F		45.5	30.7	38.1	7 7	5 21	11 25	3 51	10	14 1	51
21	S		45.7	33.3	39.5	7 5	5 23	0a 25	4 34	11	13 54	52
22	SUN	2ND SUNDAY IN LENT.	46.8	31.9	39.3	7 3	5 24	1 23	5 9	12	13 46	53
23	M	Society of Arts at 8 P.M.	47.4	31.5	39.4	7 1	5 26	2 46	5 37	13	13 38	54
24	TU		47.1	33.8	39.9	6 59	5 28	4 2	5 59	14	13 30	55
25	W		47.7	33.7	40.3	6 57	5 30	5 19	6 18	15	13 20	56
26	TH											

From observations taken near London during forty-three years, the average day temperature of the week is 46.6°; and its night temperature 31.8°.

DWARF FERNS FOR EXHIBITION.



HE classes for exotic Ferns hold an important position at flower shows, but Tree Ferns are either entirely excluded or have special classes devoted to them. The reason for this is, that many gardeners are in a position to grow species of dwarf habit, while comparatively few have accommodation for those of larger growth. A clause might also be inserted in the schedule to the effect that all the plants be not only distinct species but of distinct genera, for really good exhibition Ferns are so numerous that there would be no difficulty in obtaining the requisite number. A class might be further provided for three or four species of the genus *Adiantum*, which would bring together some of the most graceful members of the Fern world, though, of course, only large societies would be in a position to attempt such a class.

Referring now to the culture of Ferns, especially specimens for exhibition, I think that attention to drainage is of the first importance. Soil is not of so much consequence, as I have large plants growing in peat, a mixture of peat and loam, and loam alone, and all are thriving well. A pot 12 inches in diameter should be nearly half filled with drainage, and larger pots in proportion. We obtain the fibrous rhizomes of *Lastrea dilatata* from the woods to place over the drainage. This lasts for a number of years, and is much the best material procurable for the purpose. The very dwarf-growing Ferns, such as *Pteris scaberula* and *Davallia bullata*, require deep pans like those employed by Orchid growers. The composition of soils, as already stated, is not very important, but I have always found Ferns easier to manage when growing in a compost of the best fibrous peat broken up in small pieces about the size of a hen's egg with an equal quantity of fibrous loam, to which an eighth of rough sand and a twelfth of charcoal broken into small nodules have been added. Such a compost must be very firmly rammed into the pots, and when thus treated with drainage as above described most Ferns may be freely supplied with water. Many Ferns require special treatment, but the above remarks apply to the majority grown. In the matter of shading I do not think more is needed than will secure the fronds from being discoloured by the sun. Both stove and greenhouse species are, however, benefited by free ventilation and by less atmospheric moisture than is generally considered necessary.

Now as to the practice I have found successful in growing Ferns to exhibition size rapidly. Let us suppose that there is a sufficient number of the species wanted, well rooted in 4-inch pots. By the middle of the present month a shift into pots 7 inches in diameter should be given. Under good treatment those that have made the strongest growth will be improved by a shift in the beginning of August into 9-inch pots, leaving the others until spring. During the months of November, December, and January keep the whole stock quiet. In February repot those which did not require it the previous August, supplying the older plants with weak liquid manure every time water is required,

soot water being a very good stimulant for Ferns. In August or the end of July shift the strongest plants into 13-inch pots, the others into pots a size smaller. If the Ferns repotted in spring have grown well they may require repotting at the same time, though not into such large pots. Let the winter treatment be the same as above indicated, and again in spring commence supplying liquid manure. Potting may be deferred till the following spring, or even till August should the growth be strong. The latter time is one of the best for repotting Ferns, as the roots become well established in the soil before winter, and the plants are ready to start in spring without a check. Pots from 15 to 18 inches in diameter will be required for most of the plants at this time. Exceptions will be found in the deciduous *Adiantums*, in the Bird's-nest Fern, and one or two others, which do best when rather restricted at the roots. When in these large pots the plants may be kept healthy for two or three seasons by annual dressings of sheep droppings or dried cow manure applied to the soil, with supplies of liquid manure. Young plants produce by far the strongest and best developed fronds, but old plants may be considerably improved by having an inch of the ball cut off all round, a portion of the base of the ball being removed at the same time. The plants may be repotted in the same pots after these have been washed. Insects are not generally very injurious to Ferns. If they should become troublesome the only cure for large plants is to cut off and destroy the whole of the old fronds just before the young fronds commence growing. Green fly is sometimes troublesome on *Adiantums* when grown in too much heat; very mild fumigation repeated three evenings in succession will destroy this pest, but great care is necessary, as the fronds are so very easily damaged.

I append a selection of reliable species, giving cultural notes where necessary. Holding the most prominent position is the genus *Adiantum*, of which the following species are all worthy a place in our list:—*A. cuneatum*, though so common, is when well grown one of the best. A plant we exhibited last autumn was between 5 and 6 feet in diameter. This species and those allied succeed best in a cool temperature during winter. *A. coneiforme* latum, though requiring careful treatment, is very handsome. When at its best the earliest whorl of fronds are arched over, completely hiding the pot, another whorl arched slightly, while a third whorl should be nearly developed. This species succeeds in a stove and requires to be well shaded from the sun. As for *A. cuneatum*, I diminish the supply of water slightly at the roots of this species during winter. *A. farleyense*, though easily grown, is not often seen in good condition; it is generally overpotted or watered to excess. *A. formosum* with the species which follow require abundant root space. None of them should be allowed to become dry in the winter, as the rhizomes never cease growing. *A. trapeziforme*, *A. Sanctæ Catharinæ*, and *A. peruvianum* may be all grown with advantage. I prefer the first named if only one can be grown. *A. pedatum*, though not so fine as any of those named above, is useful where space is limited, as it can be grown in a greenhouse. The genus *Gymnogramma* contains several species which make good exhibition

plants. The best are *G. chrysophylla* and *G. pulchella*, both of strong growth and effective. These succeed best in a stove temperature, and require an abundant supply of moisture at all seasons. Of the *Davallias* the best undoubtedly is *D. Mooreana*, which grows very rapidly. Its only fault, for those who have not much space, is the enormous size it becomes in two or three years' time. *D. bullata* and *D. canariensis*, both of dwarf habit, make very effective specimens. *D. polyantha* is a stove species, and may be grown where there is plenty of space. A Fern, very like *D. Mooreana* and in all respects excellent for summer exhibitions, will be found in *Leucostegia immersa*. A small piece of this Fern was sent to me by a friend five years ago; last year it measured 7 feet in diameter. The *Aspleniums* are not of much use to exhibitors; however, a large specimen of *A. flaccidum* can by no means be despised. Our plant of this species is 9 feet in height, the fronds drooping over and completely covering the pot. A plant not often exhibited is *Platyocorium alcinorne*. Our largest specimen is growing remarkably well potted in fibrous peat and charcoal. It measures 4 feet in diameter and 2½ feet in height, and this year's growth will make it much larger. *Neopteris australasica* is so distinct that a plant should be in every collection. It should be kept rather root-bound, does not require much water at any season, and requires an intermediate temperature. *Pteris scaberula*, a pretty dwarf Fern, is well worth cultivation where there is room, but it must on no account be allowed to suffer through deficient supplies of water.—R. P. BROTHERTON.

HOW TO GROW GOOD GRAPES.

I HAVE had both successes and disappointments in Grape culture, and my deductions on the subject in hand are the results of long experience. In the first place, without a good border it is impossible to grow good Grapes. In making an outside Vine border the soil should be dug out from 2 feet 6 inches to 3 feet, with 14 inches of stones for drainage, covered with turves. If water does not pass away freely the border should be concreted, and have 2-inch drain pipes placed in rows 6 or 7 feet apart from back to front, in connection with a main drain the whole length of the border. The soil should be good and rather strong loam cut 4 inches thick from an old pasture; chop it up in pieces the size of your hand, and place it in the border at once, and the Vines will have the benefit arising from slight fermentation and decomposition. Bones are of great importance in the formation of a Vine border. Use them freely, also add plenty of old mortar from buildings, some charcoal, and broken bricks, and a very small addition of well decomposed dung, the whole to be mixed with the turf as the border is made. Borders thus made will last many years with annual top-dressings.

Make the border 6 feet wide at the first, and when the roots have penetrated through it add another 3 feet, and so on until the border is complete. The front of each addition to the border should consist of a wall of turf, which must be carefully broken with a steel fork so as not to injure the young roots each time fresh soil is added. The border inside the vinery should be made first, and when it is full of roots then make the outside border, which, where the rainfall is great, should be one-half above the ground level.

For planting procure well-ripened Vines in pots in November, cut them down to two or three eyes, and keep them cool until they have made 3 or 4 inches of growth; then shake all the soil from them as you would from a Geranium, spread the roots out carefully, and place some fresh fine soil about them to give them a start. Plant on a cloudy day, or shade for a few days if the sun is powerful. When the Vines have made a growth of 6 or 7 feet pinch out the point of the leader, and let the laterals grow unchecked. When the leaves change in the autumn gradually shorten the laterals, and when the canes are quite ripe prune them down to 3 feet.

About the beginning of October, when the border is full of roots, cover it with 4 or 5 inches of manure that has been stacked three or four months, and which cuts like bog peat—rich and fat. The young rootlets will not dive deep in the border when they have such food as that near the surface. The borders should be top-dressed every year, removing a portion of the surface and adding fresh loam and manure. The borders must be watered as needed to keep them moist at all periods of the year. In the spring start the Vines slowly; 45° will be high enough at night, and 50° by day, increasing the temperature steadily with the growth until 55° by night and 60° by day are reached when such as Black Hamburgs are

in bloom. Muscats may have from 5° to 10° higher, but I do not advocate high night temperatures, involving hard firing. Encourage as much foliage as possible so as to ensure a healthy root-action, but avoid overcropping, and crop lightly when the Vines are young. The wires for training should be 18 inches from the glass. When the canes are ripe shorten them each year to 4 or 5 feet until the top of the rafter is reached. I always stop the growths at two leaves above the bunch, and pinch the sub-laterals at each leaf as it is formed. It is a great mistake to allow the laterals to grow 2 or 3 feet, and then "let daylight in" as it is called, a practice that conduces to shanked Grapes. I never syringe the Vines after they are in leaf. Sufficient moisture can be kept up by syringing the plants and walls of the house, and keeping the paths wet.

Ventilation is a most important point in Grape culture. Air should be admitted early, and gradually increased as the solar heat increases. Do not wait for the thermometer to rise 5° or 6° before opening the ventilators; that is very bad practice. No scorching will occur if the foliage is dry before the sun shines on it. After the Grapes are thinned the top ventilators should be left open about half an inch or so all night; and if the weather is favourable and frost ventilators are placed opposite the pipes they can now be used with advantage, and when colouring commences ventilate freely night and day.

Shanking.—This is a mysterious yet a too familiar disease of the Vine. Learned men say that it is caused by cold borders, and the roots entering a poor subsoil. I have no doubt that is one cause, but Grapes will and do shank in inside borders, which are warm, and even in chambered borders. I am not ashamed to say that I do not know how to grow Grapes without shanking, but by careful attention to both roots and foliage endeavour to reduce it to a minimum. I should very much like to know why bunches of Grapes which have formed after the thinning of the principal crop upon the laterals never shank but always colour well, while the principal crop on the same Vines often shanked seriously. This is a remarkable fact that I have noticed for years, and I have never heard nor read of it being explained. Again, how seldom we see shanking in Vines in pots. Overcropping is said to produce shanking. I doubt very much whether it is the real cause. Overcropping will exhaust the Vine, and the bunches will be smaller; but if overcropping causes shanking why do not such Vines as those at Hampton Court, Valentines, and other places shank? These old Vines have no top-dressings and no liquid manure. Again, who ever saw outdoor Grapes shank? I have never seen them. And who will assert that the roots do not go down into the subsoil, whether it be clay, gravel, or loam? and the Vines generally carry all the bunches they produce. I am of opinion that if the extension system of Grape-growing was more generally adopted we should not see so many shanked Grapes.

Pruning.—After the Grapes are all cut keep a warm, dry, and well-ventilated atmosphere, so as to have the wood well ripened, and prune as quickly as possible after the leaves have fallen, so that the Vines can have a long rest. When the spurs have become long and unsightly and produce small bunches young rods should be encouraged. The plan I adopt to place a young head upon old shoulders in Vine culture, is to choose a young bud as near the base as possible, train the growth between the old rods, and at pruning time cut it down to about 3 feet from the base, at the same time sawing off all the spurs from the old rods the length of the young canes, and continue the practice yearly until the top of the rafter is reached. By this plan not a bunch of Grapes is lost. After pruning rub some painters' knotting over the cuts, which will prevent all bleeding, and keep the house as cool as possible during the resting period. Vines that are infested with insects, especially the mealy bug, should have the loose bark removed and be well washed with strong soft soap water as hot as the hand can bear, scrubbing the rods with a hard plate brush; then dress them with a mixture of equal parts of soft soap and flowers of sulphur boiled in water, adding half a pint of tobacco juice. Add also three or four handfuls of sulphur to the limewash for the walls of the house. These are preventive measures, and will tend greatly to keep the red spider in check. Of all insects that infest the Vine there is none so difficult to eradicate as the mealy bug. I have found Bridgeford's Antiseptic certain death to the insects, while it does not injure the foliage. Thrips are destroyed, or, what is better, prevented, by fumigating the house once a fortnight if there is a suspicion of the insects being on the premises. From the time the Grapes are set a little sulphur paint is applied to the pipes every week as a preventive against red spider

and mildew. The latter I have never been troubled with.—
J. NUERN, *Gardener to J. D. Llewellyn, Esq.*—(Abridged from
a paper read at one of the *Wimbledon Gardeners' Meetings*.)

MIXED FLOWER BORDERS IN 1879.

COLUMBINES.

WHILST many have written and still are writing doleful commentaries on the failure of flower gardening in 1879, it is a pleasure to record something favourable about it. In Cheshire we are not spoilt by such summers as are usually experienced in the splendid climate of Kent, and we form our expectations and adapt our gardening accordingly. I do not say that the summer was no worse than usual in Cheshire. A field of wheat within half a mile of my house was cut on November 12th: though Apricots were abundant and large and well coloured in August, many of them were still hard in the middle of October when they were gathered: Apples, Pears, and Damsons, though unusually abundant, were small in size and did not ripen at all; but, as we take care to cultivate flowers which do well in wet summers, I had last season gay mixed flower borders than over in the months of August, September, and October, and that too on a soil naturally ungenial and cold, being stiff red clay. Of course I do my best to drain and improve it, but whatever I do the climate and the subsoil diminish my list of hardy plants to half the number that are hardy in Kent or Cornwall.

I see in all the gardening journals so many inquiries for lists of hardy perennials which are easy to obtain and easy to cultivate, that I think it may be interesting to those who make such inquiries to have a few notes about plants which did better than usual in my garden in 1879, because I feel sure that the management of these plants will be easy to everyone who has a garden. Beginners must be warned again and again that if they wish to have good mixed and herbaceous borders they must not allow them to be dug and "tidied" up in autumn. In many gardens the stems are removed before they are half dead, inducing the plant to begin fresh growth for the frost to kill and weaken the root permanently. Dead leaves, the best friends of many plants in winter, are cleared away from their crowns to enable the rain and cold to penetrate. Spring bulbs, Lilies, and Anemones are cut to pieces with the spade or scattered at various depths all over the bed, and the roots of every plant loosened. Those who have not courage to insist that this is not done should bargain to have one portion of the border left untidy and compare results the next year, and if the gardener is reasonable he will be convinced.

I will begin with Columbines, which flowered very well last year though late. I mean especially *Aquilegia vulgaris* and its varieties. All who complain that their gardens were flowerless last June should cultivate them. Other species of Columbine are good and well worth a trial, but many are capricious and cannot be depended upon in all gardens as the common Columbine can. To have good Columbines you must raise them yourself from seed. Buy the best seed possible, and assign in your kitchen garden a few square yards for a permanent Columbine nursery, capable of holding three or four hundred seedlings, to be cleared out as fast as they flower, and to be renewed from seed annually. Do not expect to have more than 4 or 5 per cent. worthy of being promoted to your mixed flower borders. When you select one transplant it at once with as large a ball of earth as will include all the roots, having first dug the hole for it. Columbines do not like being moved. Plant the rejected plants in your woodland walks, or wilderness, or orchard hedge, for which no flower answers better. Having selected and promoted a dozen of the best and most distinct colours, take a large camel's-hair brush, and on a bright day, choosing the finest individual flowers you can find, hold the flower (whilst growing of course) between the finger and thumb of your left hand, and push the brush once somewhat roughly into the centre of it; then carry the brush carefully from plant to plant and repeat the operation, going alternately to opposite colours. If you have other Columbines, such as *A. glandulosa*, *A. fragrans*, and *A. Skinneri*, operate on a flower of these in turn with those of *A. vulgaris*. All the flowers so treated should have a bit of soft worsted tied round the stalk, and seed should be saved from these only. Part of it may be sown as soon as ripe and part saved until the following spring. I cannot say I have found any advantage from sowing in summer, though others say that they have. In this way replenish your nursery bed of Columbines every year, and by removing all inferior plants directly the flowers open, and brushing as before only

the best flowers from which to save seed, you will in a few years have a collection of Columbines such as cannot be bought in any nursery garden. It is hardly possible to get a stock of Columbines by division from a single plant, and the varieties do not come true from seed. So small a per-centage of the seedlings are worth saving that it does not pay nursery gardeners to keep selected varieties. The finest Columbine I ever raised, which had the tall branching habit of *A. vulgaris* and the clear rich colours and large flowers of *A. glandulosa*, I lost by trying to divide; so if you raise anything very choice be warned by this.

Seedling Columbines differ remarkably in the shape as well as the colour of their flowers. There is the crimped, bell-shaped, semi-double flower; the wide-spreading flower with the single cup-shaped corolla and long sepals, by far the most elegant form; and the stellate form, in which the sepals and petals are indiscriminately mixed. In colour you obtain every shade of blue and pink and chocolate, also pure white, and white bordered with pink or with blue. It must be owned that most of the sepals retain a suspicion of green in their colouring, but the more careful your selection the more this disappears. Altogether there is not a more useful June flower for the mixed border than the common Columbine, but you must raise it for yourself.—C. W. DOB.

IMMATURE PEACH AND NECTARINE SHOOTS.

AT length the foliage of 1879 has fallen from the branches of Peach and Nectarine trees on open walls. The time for pruning has also come. How shall it be done? Not hastily ought we to decide, for we have to treat an exceptional case. Quite two-thirds of the shoots are weakly and have no triple buds; the growth is immature, and therefore, even if the blossom buds expand, it is probable that most of them will fall prematurely. After due consideration I have decided to cut off all the weakly shoots, and to shorten the others to a plump wood bud or triple bud. Most of the weakly shoots will be cut close in to the old wood, a portion of the base with a bud or two only being left to secure stout new growth in the bare places. The invigoration of the trees and not a crop of fruit should be our chief aim this year.

Now, this statement of my intentions is unlikely to obtain general approval, and I invite dissentients to show cause why it should not be followed. In doing this I may confess it is not without a motive, for I am puzzled with a system of pruning that has lately come into vogue, and which has its advocates too among men who are not prone to rash hastily to conclusions. This system may be described as a thinning of the fruiting wood, but shortening little if any of it. Why? The only answer ever received to this oft-repeated query is, that shortening is unnecessary. That is a dictum to which I cannot assent. Repeatedly have I retained shoots 6 feet long upon young fan-trained trees with excellent results, but never without cutting-back to a strong wood bud in order to induce an abundant and robust lateral growth. How can anyone expect to obtain fine fruit without doing so? The philosophy of the process is so clear that we can only wonder at its being called in question, and ousted for a system that points unmistakably to attenuated growth and its inevitable concomitant—small fruit. All rash hacking with the pruning knife is deplorable, but without its free and intelligent use here, especially now, it is vain to hope for healthy trees or fine fruit.—EDWARD LUCKHURST.

MANDEVILLA SUAVEOLENS.

OF the numerous handsome climbing plants now employed to decorate the roofs of conservatories and greenhouses, few are really more desirable than *Mandevilla suaveolens*. It is of extremely free growth, and produces the white fragrant flowers in profusion during the summer if a little attention is paid to the pruning, the compost, and the border in which it is planted. Although it may be grown in a pot, satisfactory results are rarely obtained and should not be expected from such treatment. The best plan is to prepare a well-drained border, filling in with a compost of turfy loam and peat in equal parts, together with a liberal addition of sand; in this the plant will grow rapidly, and require abundant supplies of water whilst flowering. Prune freely, cutting back the long straggling shoots to firm wood, and exercise great care to prevent the attacks of mealy bug, to which the plant is very subject. The only effectual method when a specimen has become infested with this pest

is to loosen the shoots from the rafters in the winter, and give every portion of the plant a thorough syringing with a solution of soft soap, afterwards washing it off with clear water. The dark green foliage is also greatly improved in appearance if occasionally washed with clear water to remove the dust which constantly accumulates on the surfaces.

A well-grown plant is very beautiful, and the fine white flowers are produced in such numbers as to prove of great value in supplying the very general demand that always exists for cut flowers, especially for those that are both beautiful and fragrant. Propagation is effected by either seeds or cuttings, the latter being the better mode, young firm shoots being selected and inserted in a compost of sand and peat. The pots should be plunged in a warm propagating frame, and as soon as the cuttings have rooted they may be potted off singly in small pots, still employing sandy peat as soil, and place the plants in a stove to encourage growth, repotting them as they increase in size until large enough to plant out in the border.—*C., Briston.*

ABOUT POTATOES.

THE seed time for Potatoes is approaching, and no time should be lost in selecting such as may be required. The following are some of the leading varieties:—*Magnum Bonum* will doubtlessly be extensively grown as it deserves, but whether it will maintain the standard of excellence claimed for it by seedsmen is somewhat uncertain. *Scotch Champion* is another strongly advocated as a disease-resisting variety. So far my experience of it is limited. If I have the true variety, its outward appearance is most commendable; it has very deep eyes, and resembles *White Rocks*; its lateness, too, is a disadvantage. *Grampian* is well worth a trial in every collection; it is round with a pinkish skin, flesh white, and is of very hardy robust constitution. *Schoolmaster* has no special merit as a disease-resisting Potato, and will not be grown again by me.

Preparing the Seed.—Sets of moderate and even size, placed in thin layers and bristling with short sturdy shoots at planting time, have a decided advantage over those taken from a large heap; each has an equal start with its neighbour, consequently the crop will mature more regularly. If it is necessary to cut the sets (a practice I do not recommend) it is better to do so some time before planting, the wounds will then have time to become hardened; a fresh-cut surface is also a great temptation to insects.

Manure.—Where requisite artificial manures are the best—superphosphate of lime, guano, or fresh-slacked lime is in some instances highly beneficial, particularly where the soil contains a large quantity of vegetable matter. I should never use fresh animal manure only in exceptional cases, but rather apply it freely to the previous crop. The system of placing manure in the drills is not a good one. The young tubers coming in contact with it often causes them to become a bad colour and rough-skinned, but if the manure be thoroughly and evenly incorporated in the whole breadth of the soil the strength and vigour of the plants will be more uniform.

Planting.—Nothing is gained by planting too early, especially in cold soils. We have found Potatoes planted about the second week in April give the best results for a general crop. Much must of necessity depend upon the season and opportunity. A thoroughly well pulverised soil is indispensable. Great mistakes are frequently made by planting too thickly. If sets of moderate size are employed, a distance of 26 inches between the rows and 14 inches between the sets is quite sufficient. Good crops are often obtained by planting large sets 2 feet apart each way in well-tilled land.

The results of repeated trials have led us to believe that a check is given to the disease by pulling the haulm out of the ground, but it should be done before the disease spreads, and not till the tubers have finished growing. This is not at all times possible, as it attacks some crops at an earlier stage of growth. By standing on the ridges with the feet nearly close together and drawing the haulm sharply up between them no Potatoes need be displaced, and the skins will harden equally without it. By cutting the haulm off we think no perceptible advantage is gained.—*C. MAXTED.*

IRISH YEW PROPAGATION.—The rule stated on page 101, by Lord Kinnikillan, that the upright Yew can only be propagated by cuttings, as the berry produces a hybrid with the growth of the common Yew, is, I presume, like other rules

subject to exception. At any rate there is now a small Yew growing in a garden at Croydon which I found as a self-sown plant when a few inches high, and which I imagine must have been a seedling from an upright Yew growing close by. This young plant is now more than 3 feet high, is not more than 10 inches across, and has all the appearance of an upright Yew.—*RUS IN URBE.*

THE WEATHER AND FLORISTS' FLOWERS IN IRELAND.

AT page 104, in "Work for the Week," I find the practical writer of those excellent notes says, "The long-protracted frost is sadly against the work that ought to be done now amongst florists' flowers," and so on. Well, comparatively we are singularly favoured in Ireland so far as climate is concerned, as we have had no frost of consequence since the two first weeks in December; and, what is almost equally important, for the last six weeks we had very few showers of cold drenching rain or sleet, and, as a consequence, we are in advance of all except the most favoured localities in England or Scotland with outdoor florists' flowers. Before making a few notes from our flower garden on the above I will quote an extract from a letter received from France last week—"Once again the frost has set in with intensity. Several channels of the Seine are again frozen, and much hardship from inability to find employment must be the consequence . . . whilst almost absolutely nothing has yet been done in garden decoration. The cold has driven wolves from the mountains, and they prowl in the highways as far south as the Spanish frontier; while Lyons had 18° of frost, killing Roses, Japanese, and some Chinese trees, as well Weigelas, to the ground. Laurels, Bay, Aucubas, Eucalypti, and Veronicas that escaped last year are now gone."

Antirrhinums.—The severe weather of December injured some luxuriant plants, seedlings of last year obtained from Messrs. Daniel, Norwich; but the majority are healthy, and those seedlings that did not flower last year will bloom finely next month. Some on rockeries will flower first, and even though more exposed none were there injured by frost. Wall-flowers grown beside them are not only uninjured but are flowering freely. When gardens are generally so bleak and flowerless those old favourites are always welcome. I grow them in rich soil, and always apply a top-dressing in the autumn. This is a protection to the surface roots.

Auriculas.—A large number of seedlings planted out in raised beds have, owing to the mildness of the past six weeks, been making steady growth. The plants in pots have had the soil top-dressed with loam, leaf soil, old dried manure, with washed river sand or powdered charcoal to keep it open. This was done a fortnight ago, and already in the most forward I have noticed blooms appearing. As mentioned in a previous article I never see that pest the woolly aphis, nor even the green fly on my Auriculas.

Anemones.—I consider these most desirable for early blooming. I have a fine specimen of *A. coronaria* on which flowers are now opening. They are always bright and handsome and invaluable for bouquet-making. I have measured some purple and scarlet blooms and found them 2½ inches in diameter. The double variety, though not so large, is even more brilliant. Later forms are *A. fulgens*, bright crimson; while *Honorine Jobert* and *A. japonica* bloom into the autumn, and should be in every shrubby border. The value of *A. coronaria* is, however, now most conspicuous. I top-dressed the border in the autumn with a mixture of leaf soil and well-decomposed manure, while I give them occasional supplies of liquid manure in summer. My experience is that no other florists' flower impoverishes ground so rapidly as the Anemones.

Polyanthus.—It is generally recommended to remove early flowers; but I must confess they are so fine with me since the frost departed before Christmas that I could not think of doing so. Between established plants, divided clumps, and seedlings I shall have blooms into autumn and in the order mentioned, and of almost every shade of colour and marking excepting blue; but I am proud to see from paintings kindly transmitted to me by Mr. Cannell of Swanley, Kent, that even that may shortly be obtainable, together with many rare plants of peculiar markings not yet in commerce.

Pansy.—Many of the remarks under Anemones and Polyanthus as regards culture and treatment apply to the Pansy, except that the latter is of stronger growth than either, and under liberal treatment a continuous flowerer. I propagated

some splendid new varieties I obtained from seed and transplanted the cuttings during the end of autumn. Owing to the mildness of October and November they were established before winter and are now blooming. The fancy and Belgian varieties are equally easy to propagate. I will conclude these observations on hardy florists' flowers in another number.—W. J. M., *Clemm.*

HARDINESS OF ROSES.

YOUR correspondent "C. P. P." when writing on this subject last week, after recommending the softening of pottery labels with paint, closes with the following paragraph—"Relative to frost injuring Roses Mr. Boyes tells us that 'facts are stubborn things'; so are men sometimes, or they would admit the fact that young Rose stems do not suffer from frost so much as old branches do, nor is there such a plant as a really hardy Rose." I am at a loss to understand what could have induced "C. P. P." to make the above remarks, seeing that I wrote the following sentence above a month ago—"The wood which resists the most frost is the youngest, if it be ripe; and in many cases it happens that this wood is unfrozen while the older wood below is killed." How, then, can "C. P. P." charge me with refusing to admit that which I was the first to state as true? Again, with regard to his stating there is no such plant as a really hardy Rose, I cannot help thinking there are numbers of Roses hardy in every sense of the word.—F. BOYES.

CARNATIONS AND PICOTÉES.—No. 12.

THE months of December and January should be a time of rest for the plants. The principal things to attend to are ventilation and cleanliness. Do not at any time allow the plants to become too wet, and do not permit any water to fall on the foliage. Never supply water when the weather is frosty, as should the soil in the pots become dry the best plan will be to place the plants either in a greenhouse or the house window, where they can be watered and restored to their winter quarters after an interval of twenty-four hours. Never allow the foliage to shrivel from a deficient supply of water, and destroy every aphid directly it is noticed. Frost will not kill aphides, as I found to-day when looking over some Auriculas in a frame, the lights of which were propped up during the last frost, the plants having been frequently exposed to 20° of frost at night; still it has not been sufficient to destroy the aphides. At the end of this month it is a good practice to give the plants a syringing, using Gishurst compound or a solution of soft soap, allow it to dry on the plants, and a day or two after they may be syringed over with clean water.

Composts and pots will require preparing for planting time, which in late situations (and where protection can be given), should commence at the end of this month.

It is now upwards of thirty years since I commenced growing Carnations and Picotées, and never have I seen such an unfavourable season for the plants as the one already past. The winter of 1878-79 with its long-continued frost (thirteen weeks in our district), was very fatal to the strong-growing varieties, also to those plants where the roots had not reached the side of the pots before the frost set in. Some varieties, as John Keet, R.F., and John Smith, R.F., suffered very much. I had twenty-four plants of each variety, and at the end of the winter only two plants of John Smith and four of John Keet survived. After the winter came ten weeks of dull cold weather, wind north-east all the time, which in our district effectually prevents the plants from growing. When the weather did change it was worse still—drenching rains with little or no sun. One time during the summer the sun did not shine for nearly five weeks, at the same time the nights in many cases were clear but very cold. I generally grow about two hundred plants for early bloom; these are potted in February, and grown in frames and a cool house until the fine weather sets in, when they are placed on the stages; by this means I generally obtain two successions of bloom, one about a month earlier than the other. My earliest plants were in flower in the middle of July, and from that time until the end of October there was a succession of flowers. In many cases, however, the flowers were very poor, deformed, short of colour, and again some varieties came all selfs, notably Lord Napier & S., all of which came a maroon self.

Layering I commenced about the middle of August and finished on the 8th of September. The plants generally were

far from being in suitable condition for layering, many being so coarse and brittle that it was very difficult indeed to peg the layers without breaking them. There was also great numbers which had made so short a growth that it was impossible to layer them.

From layering until taking-off time (the second or third week in October) the weather generally was fine and dry, and I expected a good strike amongst the plants. The result was, however, far from my anticipations; they had made such little progress I was compelled to leave them until the end of the month, when a few were rooted. These I placed in small pots, and the others were placed on a hotbed. The hotbed was formed of fresh horse dung, and was about 7 feet 6 inches square and 18 inches thick, covered with 6 inches of soil. The plants were placed in the bed as soon as it was completed, giving a slight watering overhead to settle the soil firmly around the plants. The frame was then placed on the top, and from that time until the end of last month the frame remained closed. The plan has proved very successful, and is certainly the best I ever adopted. An old grower who saw my plants the other day was greatly surprised at their fine appearance.—GEORGE RUDD.

ESTIMATE OF EARLY PEARS.

I WISH it to be understood that I am not speaking of the merits of early Pears grown at any other part in the neighbourhood of Tonbridge, as the soil is so very different at other places. I have mentioned before that our soil here is a stiff loamy clay, and the subsoil stiff clay. I have given you my estimate of Citron des Carmes, I will now follow with other varieties in their order of ripening with me.

Tyson.—A very nice little Pear, very melting and juicy, and of very agreeable flavour. It ripens about the beginning of September. It is a variety that I should not like to recommend, as it is a very shy bearer. I have two large pyramids here, and have never gathered a quarter of a crop from them for the past ten years.

Jargonelle.—A third-size Pear of first-rate flavour, very sweet and very juicy. It ripens about the middle of August, but only lasts a few days. It bears very freely grown as a bush or espalier. I have found that it does not succeed as a pyramid, as the branches grow strong and straggling. The fruit never grows larger than a hen's egg with me.

Williams' Bon Chrétien.—A first-class Pear in every way, very large, good flavour, and of a beautiful golden yellow colour mottled with red next the sun. It is the best early autumn Pear that I grow. The flavour I find is richer and more sugary in fruit gathered from espaliers or pyramids than from trees grown against a wall. The fruit keeps much better if gathered before it parts freely from the tree. The variety bears abundantly, and the fruit ripens about the first week in September.

Beurré d'Amanlis Panachée.—A Pear of first-rate quality, very juicy, with rather aromatic flavour, and ripens about the first week in September. The skin is greenish yellow, beautifully striped with red, cinnamon, and green. It is a very attractive Pear either for dessert or exhibition. It bears very freely about every other year. I have it growing as an espalier grafted on the Quince stock.

Beurré d'Amanlis.—A very large Pear, frequently weighing 15 ozs., and I have had it weigh 16½ ozs. A few years ago nine fruits were shown at the Crystal Palace September Show by a Jersey grower, weighing together 8 lbs. 7 ozs., which was thought an extraordinary weight. That year I gathered from an espalier nine fruits which weighed 8 lbs. 13 ozs. The flavour is excellent, slightly acidulated, with plenty of juice. The tree is a very strong grower, and bears very abundantly every alternate year. The fruit ripens at the end of September, and will last to about the second week in October generally; but the past year was an exception, for I have only just finished using this variety.

Bonne d'Ézée.—A very handsome Pear of large size, but only of a second-rate quality; the flesh is white and very juicy, but does not possess a rich flavour. The tree requires a sheltered situation, as it blooms early and is not very hardy. I consider this variety and Brockworth Park alike. I have both growing here, the first as pyramids and espaliers, and the last on a wall.

White Doyenné.—A large Pear, but only of a second quality. The flesh is very white, melting, slightly aromatic and juicy, but not of excellent flavour. The tree is a very good bearer,

scarcely ever missing a crop. The fruit ripens about the first week in October.

Doyenné Boussoch.—A very large and handsome variety, the skin being of a beautiful golden colour mottled with a rosy tint on the sunny side, and covered with numerous brown dots. A fine variety for exhibition purposes. The flesh is white, melting, and very juicy, sweet and slightly aromatic. It ripens about the beginning of October, and should not be allowed to become too ripe before it is eaten. The tree is very hardy and a very abundant bearer, and deserves general cultivation; it is growing here as an espalier.

I have given you a fair estimate of early autumn Pears grown here. The Pears I have described as only second quality are good, but the flavour is not equal to such varieties as Jargonelle, Williams' Bon Chrétien, and Beurré d'Amanlis.—G. H. G., *Hollanden, Tonbridge.*

NOTES ON ROSES.

I AM quite in accord with Mr. Boyes about the Manetti stock, and I think the Celine is more to be trusted for Teas than the Boursault, which, though hardly a good grower and free rooter, is more suitable for weak Hybrid Perpetuals and some Noisettes than for Teas. As to Capitaine Christy "A. M. B." does not shake my opinion. Our election was to do with new introductions—not one colour compared with those of a cognate colour, but to name thirty-six best new Roses. Capitaine Christy amongst that section is no better than old Victor Verdier, and not to be named in the same day with La France, Eugénie Verdier, Magna Charta, Marie Finger, Duchesse de Vallombrosa, Mdle. Marie Cointet, Princess Mary of Cambridge, Marguerite de St. Amand, and several others. "D., Deal," is quite right about the much-praised Cheshunt Hybrid; it has no business to be classed among the Teas, and is certainly no exhibition Rose, but occasionally very good as a garden variety or for a button hole.

I remember a grower of flowers for London market, now dead, being called in by a brother judge at South Kensington when I wanted to put one set of Teas first, and there being only two of us (a mistake since remedied) giving his verdict against me, because, he said, "Oh! those are just the Roses I can sell for button holes." The result was different from what he anticipated, for my brother judge Canon Hole at once decided in my favour. I say just the same about Cheshunt Hybrid; it is a nurseryman's Rose, not a good one for exhibition purposes, but a very useful one in a garden.

I do not think the frosts this year will have done nearly the same hurt to Roses as last year; for though there was no snow to protect the roots, yet those who have dwarf Roses on the Manetti generally take care to cover with manure, or litter, or bracken. I never had much finer Roses than last year, and yet every Rose had to push its way from below ground with very few exceptions.—C. P. P.

TREES AND SHRUBS VERSUS GROUND GAME.

AFTER the experience of two severe winters (in 1878-9 snow covered the ground for many weeks) it may be useful now that planting can still be done to offer a few remarks upon the damage done by hares and rabbits to trees and shrubs when their ordinary supplies of food are cut off. There is a prevailing opinion that hares and rabbits when numerous and pressed by hunger will eat any kind of shrub and tree. Perhaps so, but I have found that the animals have partialities under favourable as well as under adverse circumstances. Trees and shrubs are liable to be attacked in some instances in proportion to their age, as whilst the bark remains smooth they are not safe; but this does not hold good in all cases, as the attacks depend considerably upon local circumstances.

Hollies were completely destroyed, also Laurustinuses and common Laurel. Arbor-Vitæ, indeed all Thuja, were injured. Junipers, and all the young growth of both the common and double Furze were eaten, and in many instances even the main stems; Broom shared a like fate, and such indigestible food as Heather was not left untouched. Berberis or Mahonia aquifolia afforded ample food both in foliage and stems. Irish Heath has completely gone, indeed it is a capital forage plant for them when food is plentiful; and of the leaves and young growth of Arbutuses nothing remained except the parts out of reach and the main stems. Thorns and the Pyrus family generally suffered, especially Cydonia japonica, also the common and Weeping Ashes; and young plants of

Oaks, Larches, Scotch and Silver Firs were injured severely. Norway Spruce Firs were closely cropped, and the Norway Maple with the Sycamore were barked, also many Willows and Poplars. Newly-planted Hemlock Spruces were quite gone, and Austrian Pines appear to have afforded plenty of food, being more eaten than any Pinus of the same age. Pinus Cembra received a good lopping, and Sweet Bays were in some instances quite destroyed. Pinus excelsa, beyond the loss of foliage and part of the young growth, was better off than most others, and similar remarks apply to Wellingtonias. Evergreen Oaks were much disfigured, Cryptomeria japonica appearing to have been a dainty morsel. Roses in 1878-9 were eaten to the snow line, both wood and bark; neither the Sweet Briar nor the common Briar escaped. Euonymus europæus had the young wood nibbled, but was not barked. Ivy was closely cropped, and Elms with Limes were barked considerably. Apples of thirty years' growth were stripped clean of bark; Pears, Plums, and Medlars, with Cherries of a dozen years' growth, were scarcely touched. Beeches, Laburnums, Forsythias, and Privets were nibbled, and Guelder Roses also, especially Viburnum dentatum and V. plicatum, while Deutzias have been sorely tried, D. gracilis being cut off. Taxodium sempervirens much eaten, and Aucubas too. Syringas were somewhat nibbled, but not much, and the same remark applies to Weigelas. Cupressus Lawsoniana was not touched; the rabbits and hares appeared to find these trees more palatable in summer than in winter. The white American Spruce was not much damaged, nor Abies Menziesii. Piceas grandis, nobilis, and Pinsapo were very little injured. P. Nordmanniana were treated somewhat more severely. Spanish Chestnut and Horse Chestnut were barked completely. Ribes had the young growths nibbled off, also Berberises. Portugal Laurels had the young growths considerably lessened, and English Yews suffered similarly, but in the case of the two last only the shrubs that had been recently transplanted were interfered with, and it is remarkable that the most injury has been done to shrubs and trees in a weakly state, or to those that had not been long transplanted. I must not omit to mention Araucaria imbricata, which had the young shoots and leaves cut off, and Skimmia japonica has been eaten off completely.

I may summarise the above observations by remarking that Beech, Cupressus Lawsoniana, Thujaopsis borealis, white American Spruce, with Portugal Laurel and English Yew, also Betula nana, piceifera, Wellingtonia, and Piceas (except P. pectinata) did not suffer to such an extent as to interfere with their after-growth. There were, of course, differences in the extent of the injury, but those that are not described as barked or destroyed may be planted with every prospect of success where rabbits and hares abound. Both the Atlas and Lebanon Cedar had the young growths severely cut, and the Decidars were barked.

Rhododendrons, Kalmias, Andromedas, Irish Yews, Common Pine, Birch, and Alder received no injury.—G. ABBEY.

PORTRAITS OF NEW AND NOTABLE PLANTS.

BOLLEA CŒLESTIS. *Nat. ord., Orchidaceæ.*—"The rarity of blue or violet-coloured Orchids has given a notoriety to this remarkable plant, which is the largest of the genus to which it belongs, and from the size and colouring of the flower by far the most showy. It would also appear to be a very free flowerer, as Mr. Backhouse of York states that four and even six flowers occur on one shoot, and that twelve had been seen on one of his plants with three shoots. As to the native country of this plant, Professor Reichenbach says, 'It was discovered somewhere in western tropical South America by M. Roehl, or by the Messrs. Klappock, his nephews.' Mr. Backhouse for its culture recommends a strong light, but with slight shade in intense sunshine, a humid atmosphere, free watering with water of about the temperature of the house, but never below it, and a temperature of 60° to 70° in summer, and 55° to 60° in winter."—(*Bot. Mag., t. 6458.*)

TULIPA TRIPHYLLA. *Nat. ord., Liliaceæ.*—"It was discovered by Dr. Albert Regel, on a recent excursion to the Sairam See, in latitude 42°, just south of the centre of the great Thian-schan range in central Asia. At first sight its affinity appears to be with T. sylvestris, but on looking closer it is found to have the glabrous filaments and other marks of the Gesneriana group, in which it is easily recognised by its narrow leaves crowded together near the base of the stem, and funnel-shaped yellow flowers with uniform subacute segments."—(*Ibid., t. 6459.*)

HELIANTHUS HIMALAYENSIS. *Nat. ord., Ericaceae.*—"It was discovered by the late Dr. Griffith in Bhutan, at an elevation of 8000 to 10,000 feet above the sea. In Sikkim it inhabits the same elevation as in Bhutan, and becomes a small tree 20 feet high. In the Royal Botanic Gardens of Edinburgh it has flowered under Mr. Sadler's care, and was communicated by Dr. Balfour in June of the present year."—(*Ibid.*, t. 6460.)

SOLANUM TORREYI. *Nat. ord., Solanaceae.*—"A very handsome and free-flowering hardy Solanum, a native of the prairies of the interior of North America, east of the Rocky Mountains, where this and other species of the genus form a frequent feature in the uniform landscape. It varies very much in amount of prickliness, depending a good deal on the dryness of the locality and consequent luxuriance or poverty of the plant. The young leaf buds are often a bright red-purple colour and velvety texture, and the older leaves, even in a young state, are often tinged with pale rose-red underneath. The flowers are large, produced copiously, and beautifully veined with red-purple. The plant was raised from seed sent from the Cambridge (U.S.) Botanic Gardens in 1877, and it flowered in July, 1878, in the open border of the herbaceous ground at Kew. It has survived the long cold winter of 1878-9."—(*Ibid.*, t. 6461.)

COREOPSIS ARISTOSA. *Nat. ord., Compositae.*—"This is one of the many golden-flowered plants of the Eastern United States, which are the glory of the autumnal herbaceous vegetation of that country, and are much needed for the decoration of our borders and beds, late in the season especially. *Coreopsis aristosa* has a wide range in the United States from Michigan, one of the most northern, to western Louisiana in the south, according to Torrey and Gray's Flora. It is very near the *C. trichosperma* of the same regions, differing chiefly in the longer teeth of the achenes, though as these are described as sometimes absent in *C. aristosa*, that character will not avail much. *C. aristosa* is said to be a swamp plant in America, but it has flourished in the herbaceous ground at Kew, where the soil is anything but moist, attaining a height of 3 feet; it is described as a biennial, but it is annual here, and flowers in September and October."—(*Ibid.*, t. 6462.)

BOTHIES—ADVICE TO THEIR OCCUPANTS.

Most gardeners have good reasons for remembering what a bothy is, but there are many readers of this Journal who "have not been behind the scenes," or, in other words, know but little of the real meaning of the word "bothy." The word "bothy" is not included in some small editions of dictionaries, but one rather comprehensive one that I have before me defines it as being "a rude kind of cottage." This does not enlighten an inquirer much. A more correct definition, however, is given in the "Cottage Gardeners' Dictionary." It is in this excellent book (which occupiers of bothies will do well to obtain) described as being "the lodging assigned to young gardeners in the northern part of the kingdom, and miserable hovels they often were, and in some cases still are." Bothies now, however, are not confined to the northern part of the kingdom, but are very general—in fact, few gardens of any extent are without them. Many are very comfortable indeed, but there are still many "miserable hovels" which ought either to be put into good repair and proper order, or entirely new ones substituted. Bad as many bothies are, they are as a rule still preferred to lodgings away from the gardens by the majority of young men, chiefly because of their proximity to the forcing houses, of which they, under the supervision of the head gardener, have the charge, and in the discharge of their duties have sometimes to spend several hours during the nights attending to the fires. On Sundays, again, it is necessary for one at least of the young men to be on the place; hence the necessity of providing comfortable lodgings near at hand, as a few minutes' neglect will sometimes result in irreparable injury to some very important crop.

Gardeners ought not to be lodged in "miserable hovels," oftentimes resembling the Mushroom houses and potting sheds, which they frequently adjoin, the whole being at the back or northern side of a range of houses. This position is perhaps in many instances unavoidable; but it is not the site that is objected to so much as the interior arrangements, which in many instances are very miserable indeed. Sometimes the owner of the property, sometimes the gardener, is to be blamed for this state of affairs, and the mistake, for a mistake to say the least it undoubtedly is, ought to be rectified. No bothy ought to be without a woman to put it in order at least once

a day. She ought also to cook the young men's dinner, especially for making, or, to use a bothy expression, "building" puddings. I can from experience safely assert that if made by a clean and not an untidy old woman that young gardeners enjoy pastry as much as anyone, and who can say they do not deserve it?

The behaviour of the occupants of some bothies has done much to bring them into discredit, many young men being, I am sorry to say, far from "tidy" in their habits, their conduct contributing not a little to the dislike many ladies and gentlemen have for bothies, especially if near, as they often are, to their walks. Cooking utensils ought not to be so readily thrust out of the door. I have seen a frying pan which has invariably been hung up outside on the wall fresh from the fire, which did not much improve the exterior of a certainly miserable hovel; and other obnoxious practices might be given. The foreman (second gardener) ought to make his authority felt in the bothy as well as out of it, and should receive the support of the head gardener in so doing, and much also may be done by his good example and advice towards restraining those under him from injudicious conduct.

One young man in his turn must of necessity be on the place at all times, or nearly so; but what is to prevent the rest from spending the Sabbath in a proper manner? It is a very great mistake for a young gardener to frequent "pubs," as he is generally spending his money foolishly and wasting valuable time. This, if persevered in, he will in all probability some day sincerely regret, as he will find that—easy as gardening may appear, should he have had tolerably extensive experience—there was much that he might have learned in his leisure hours. It is almost unnecessary to point out the many ways in which a young man so disposed can improve and prepare himself for the time when he will have charge of a garden. There are plenty of excellent gardening periodicals—good practical works on all subjects relating to gardening and its collateral branches, including angular and geometrical drawing, arithmetic, botany, and other branches of knowledge, all of which may with advantage be studied and practised, and may sooner or later prove of service to the student. The long winter evenings offer the best opportunities for study, but much practical knowledge, especially in the fruit and kitchen gardens, may be gained during the summer and autumn. Those that fail to avail themselves of these opportunities will in all probability be passed in the race for the "good things" of the profession, or, plainly speaking, will in this age of progression and excessive competition have to fill inferior positions to those who have wisely made the best use of their time.—*Ex-BOTHEYTE.*

NOTES AND GLEANINGS.

THE schedule of the ROYAL HORTICULTURAL SOCIETY, which has now been issued, contains full particulars relating to the various exhibitions and meetings to be held during the present year. The National Auricula Society's Show (southern section) is fixed for April the 20th, the principal classes being the same as last year with the addition of prizes for seedling Auriculas, Polyanthus, and hardy Primulas. Prizes of £8, £4, and £4 will also be offered on this occasion for ten Tea Roses in pots. The Great Summer Show will be held on June 8th to June 11th. Forty-eight classes are enumerated for plants, fruits, and vegetables, in addition to which Mr. W. Bull will give his customary prizes for new plants; Messrs. Sutton will give prizes for Peas, Melons, and Cucumbers; whilst Messrs. J. Davis & Co. offer prizes for Fuchsias, Pelargoniums, and Begonias. The Rose and Pelargonium Society's Show will be held on June 29th, when special prizes will be offered by Messrs. Sutton & Sons, Carter & Co., Laing & Co., Webb & Sons, and Webber & Co. for Tuberous Begonias, vegetables, and fruit. The annual Show of the National Carnation and Picotee Society will take place on July 27th, the classes being the same as last year. The Exhibition of the British Bee-keepers' Association will also be held on that date. The Whit-Monday Popular Show is to be held on May 17th; the Artisans' and Cottagers' Show on August 2nd. Special prizes will be offered at some of the Society's ordinary meetings on March 23rd for Amaryllises, on July 27th by Messrs. Rivers & Son for collections of Nectarines, on August 24th and October 12th by Messrs. Freeman & Freeman for fruits and vegetables, by Messrs. Ewing on the latter date for Apples, on November 16th by Messrs. Sutton & Sons for vegetables, and by Messrs. Hooper

and Co. for Potatoes, &c., on December 14th by Messrs. Carter and Co. for vegetables.

— IN the heart of Kent some of our best FRUIT GARDENS are to be found, and they are fast growing in extent. Attention was lately called to what is being done at Barham Court, on a slope of the valley of the Medway. At The Mote, a few miles distant, considerable additions have and are still being made to the fine old trees that have so well repaid the labour of a lifetime. During the last two years an orchard of some five hundred standard trees has been made; long rows of cordons and espaliers, trained in the palmette verrier form, introduced into the kitchen garden; an orchard of pyramids is also added outside, and a range of vineries and Peach houses built. This winter more orchards of considerable extent are in progress, and a wall several hundred feet in length with a glazed coping is being planted with cordons.

— BY favour of Messrs. James Carter & Co. we have inspected some HYACINTH BULBS FROM NEW ZEALAND. The bulbs are of good size and remarkably sound, solid, and heavy. They have arrived in excellent condition, and are in a state of complete rest, not the slightest signs of growth being apparent.

— MR. BARDNEY writes, "I would suggest to those who have not grown *SCILLA SIBERICA* in small 60-pots to do so another year. It is a little gem for front lines of conservatories, intermixed with Primulas, Crocuses, and other plants."

— OUR Clonmel correspondent writes as follows in reference to the WEATHER in Ireland:—"Usually February is considered the driest month in the year; 1880 is likely to be an exception. Friday the 13th and Sunday the 15th inst. were probably the wettest and most tempestuous days experienced for years here; several inches of rain must have fallen on each occasion. The wind was gusty and furious, and blew from every point of the compass from N.E. to S.W. at intervals. My spring flowers were sadly injured by the wind; even Roses, Cupressus, and large trees were uprooted, and in one case a wall was blown down."

— WE have received the schedule of the BRISTOL SPRING SHOW SOCIETY, from which we learn that the tenth Great Spring Exhibition will be held on March the 17th and 18th. Fifty-six classes are enumerated, providing for the exhibition of a great variety of plants. The chief prize is the silver cup valued at four guineas, offered by the Treasurer, W. Derham, Esq., M.A., for the best twenty-four Hyacinths of not less than eighteen varieties.

— THE schedule of the RICHMOND HORTICULTURAL SOCIETY for the annual Show to be held on July 1st, enumerates no less than 136 classes arranged under four divisions. Many of the more important classes are open to all exhibitors; there are classes also for local nurserymen and cottagers. Several special prizes are offered by gentlemen and ladies residing in the neighbourhood. The most important class is that for nine stove and greenhouse plants in flower, the prizes offered being £8, £5, and £3. In most of the other classes three prizes are offered, varying in value from £5 down to 2s.

— THE pretty Orchid *NEOTILIA SPECIOSA* is now flowering in the Cambridge Botanic Garden. The bracts are red and ornamental long before the flowers are even near maturity; these are of deep red colour and form a dense spike. The flower stem is about a foot high, and proceeds from a centre of a rosette of ample greyish green leaves.

— AN important general meeting of the following FLORISTS' SOCIETIES—the National Auricula (northern section), Royal National Tulip and National Carnation and Picotee Societies, will be held at the old "Bull's Head," (off the Market Place) Manchester, on the 25th inst., at 8 o'clock P.M. The business of the meeting is to arrange the dates of this year's exhibitions, schedule of prizes, plan of judging, and any other work connected with the management of the National Florists' Societies. The attendance of the members is earnestly requested by Mr. S. Barlow, Honorary Secretary of the Royal National Tulip Society, and Rev. F. D. Horner, Honorary Secretary of the northern section of the National Auricula and Carnation and Picotee Societies.

— RELATIVE TO BOTTLING GRAPES, Mr. D. Coombs has sent us berries of Mrs. Pince and Black Alicante which have been cut from the Vines for three months and three days. The laterals bearing the bunches were cut as long as possible,

and inserted in bottles of water with about two table-spoonfuls of finely pounded charcoal placed in each bottle. The berries are as firm as when they were cut from the Vines, and Mrs. Pince is of excellent quality.

— MR. MATTHEWS of Weston-super-Mare, referring to the description of "T. R. J." of HEATING WITH SANITARY PIPES, informs us that unglazed sanitary pipes made of fire clay are better than glazed pipes for forming flues, as they produce a better heat and are not so liable to crack as are glazed pipes.

— OWING to the MILD WEATHER Gooseberry buds are swelling fast. Now is the time to keep a watchful eye on sparrows and bullfinches near towns. The former do more damage than the latter. Not a day should be lost in taking precautionary measures.

— THE official estimate of the FRENCH VINTAGE FOR 1879, as formed from the returns sent to the Minister of Agriculture from the various departments, tallies pretty closely with the figures which have already been published in a less complete form, and it may be taken for granted that the yield is about 565,400,000 gallons, or little more than half the crop of 1878, and less than half of the average crop for the last ten years. The deficit is attributed not only to the ravages of the phylloxera and to the oidium, but to the wet weather and to the night frosts, which dried up the Grapes in the latter part of September and the beginning of October. The districts which suffered most were Burgundy and Champagne, where the yield was practically nil; the two Charentes, in which there was only a third of a crop, and the same may be said of the central departments, while in the east of France the crop represents hardly a tenth of the yield in 1878. The only part of France in which the vintage was a good one was the extreme south, from Montpellier to the Spanish frontier in the Eastern Pyrenees. The area of land planted with Vines has been reduced by 120,000 acres during the past year, making a total decrease of 370,000 acres since 1874. It is pointed out, however, in the official report that the situation has before this been even more unfavourable, and that during the years 1853-57, when the oidium was doing so much mischief, the crop fell as low as 220,000,000 gallons, and that though it rose in the year 1875 (the best ever known) to 1,826,000,000 gallons, it was as low as 760,000,000 gallons in 1873. The following table indicates, in round numbers, the acreage of vineyards and the yield in the nine departments which grow the most wine:—

Department.	Acreage.	Yield in 1879 in Gals.
Charente-Inférieure	370,000	38,000,000
Gironde	880,000	32,000,000
Hérault	290,000	106,000,000
Aude	268,000	76,000,000
Gers	250,000	20,000,000
Charente	250,000	11,000,000
Dordogne	230,000	9,000,000
Lot-et-Garonne	180,000	14,000,000
Pyénées-Orientales	170,000	30,000,000

FUCHSIAS AS ROOF PLANTS.

SINCE inquiries are not unfrequent for plants suitable for training up the roofs of greenhouses, it may not be inopportune to state how well Fuchsias are adapted for that purpose. Their free and diffuse growth and elegant pendant flowers render these plants peculiarly desirable for this mode of culture and training. By no other means can the flowers be seen to such advantage as when hanging like elegant bells—some rich, some chaste—from a roof overhead. The plants do not grow with the rapidity of climbers, yet free-growing varieties do not move slowly, and when once established they last for years, provided they are well fed and kept clean.

The plants may either be grown in pots or be planted out. In the latter case they require precisely the same treatment as Vines, only their stems must be inside the house. Good soil, liberal supplies of water, and occasional syringings are the chief requisites during the growing period; and in the winter they simply want spurring-in to the chief stems, or "main rods," exactly as Vines are pruned, and they grow freely, flower profusely, and every flower is visible.

A moderate-sized roof can be attractively furnished with plants growing in pots. In this case they need a good portion of fresh soil annually. Just as growth commences in the spring as much as possible of the old soil should be removed from the pots, and no real injury will be done if a portion of

the small half-dead roots are removed also, for others will speedily form to appropriate the food that is supplied for the sustenance of the plants. With this treatment, top-dressings of rich material and occasional applications of liquid manure, it is surprising how well and how long the plants will grow and flower. It is not possible, I think, for any lover of flowers to see a roof well covered with clean and healthy Fuchsias without admiring it—certain it is that no one visits the greenhouse which affords me enjoyment without speaking in terms of approval of the plants trained to the roof. Fuchsias are grown in the ordinary manner, but they seldom draw forth any approving remark, but the roof plants are never passed by, or rather under, without notice.

A few varieties I find suitable for this mode of culture are the following:—Avalanche, the handsome double flowers of which have an exceedingly rich appearance. This is the king of the house. Near it and very free is the good old white variety Miss Marshall, which has yielded a profusion of large flowers. Next comes the peculiar yet free and effective cherry-coloured Sedan; then follows the equally free Rose of Castile, but the flowers of this variety are not sufficiently pendant, and it is surpassed by the well-proved, distinct, and charming old Fuchsia Venus de Medici. Next is a newer variety, the bold, free, and commanding Earl of Beaconsfield with its reddish salmon flowers, the yellowest of all save Aurea superba, which is also fine for the purpose. Adjoining his lordship is the venerable double white Vainqueur de Puebla, and next to that is the fine crinoline-formed Day Dream. This is extremely pretty as thus grown, but the plant is not such a vigorous grower as is desirable, and in this respect is by no means equal to Lustre, which is one of the best of all the white-sepalled varieties for roof or pillars. A fine contrasting companion to it is the very free and very elegant Souvenir de Chiswick, and this in turn contrasts with the equally free but more modern and wax-like Covent Garden White. Other varieties are no doubt equally good for the purpose named, some, perhaps, better; but I only write of those which afford me satisfaction, and which I venture to think will afford satisfaction also to others who will grow them in the manner described. The plants after shedding their leaves are pruned the same as Vines. They are watered, perhaps, once a week, or less often during the winter; and in the spring most of the old soil is removed, and the plants are repotted in fresh good compost.—AN AMATEUR.

CEPHALOTUS FOLLICULARIS.

THIS pretty and interesting little plant is a native of Australia, where it was first discovered by Labillardiere, who described and figured it; subsequently Mr. Robert Brown also found a specimen during his voyage with Capt. Flinders. It was first cultivated in England about 1822, and is now by no means a rarity. The plant is remarkable in several ways, for it is the only species of the genus, and is considered sufficiently distinct to constitute a natural order (allied to the Polygonum), and we thus have the peculiarity of a family composed of one individual. In the leaves, too, we find another singular feature—some are flat and elliptical in form, while others are converted into extremely neat and pretty little pitchers or ascidia, somewhat resembling those of Nepenthes, only much smaller. They are dark green with a purplish shading and pink veins, and are furnished with small lids, the mouth of the pitcher being bordered with a dark-coloured furrowed ring.

The plant is naturally an inhabitant of marshy land; it should therefore be provided with a soil composed of peat and live sphagnum moss, the pot being well drained and placed in a shallow pan containing water. If the plant is grown in a pan, that should be placed inside another larger one, the space being filled with fine Derbyshire spar and kept constantly moist. In either case a bellglass should be placed over the plant. The best position and temperature is the cool end of the stove or Orchid house, where with careful attention in supplying the requisite moisture the plant will grow freely.—R. L.

BASKET FERNS.

It is not my intention to touch upon the associations of Ferns, nor all the varied uses for which they may be employed for the embellishment of our gardens, but to mention certain Ferns that are especially adapted for culture in baskets. The beauty of many Ferns depend to a great extent upon the treat-

ment they receive. Take for instance *Davallia canariensis*. Grow this Fern separately in a pot or pan, on a tree stem, and in a basket. The best plant would most likely be that growing on the stem, the next in the basket, while that grown in the pot would not half so well represent the species in question. There are many Ferns which are well adapted for basket culture, and if they receive proper treatment they reveal their true characteristics better under that treatment than any other. Several reasons might be adduced why they succeed better with such treatment, but the primary one is probably that the drainage is much more efficient.

The baskets generally employed are composed of wire in various designs. These are very suitable, for Ferns succeed well in them, and they are easily obtained. I propose, especially to the amateur, a very simple and inexpensive kind of basket, which, however, is a little trouble to make. Fill a vessel with damp sand, make a mould in the sand any size or form desired, and lay carefully all over the mould small pieces of limestone, granite, or anything at hand (limestone is especially good), till the form of the mould is made, then fill the interspaces that require it with smaller pieces, and when that is completed pour upon the whole a good coating of cement and allow it to set well; previously to the setting, however, pierce a few holes at the bottom for drainage, also about four holes near the top for the reception of the wires. This is a very simple kind of basket, and judging from my experience all Ferns succeed well in them. In the case of wire baskets something must be provided for covering the bottom and sides of the basket to prevent the soil falling through. A very good plant for this purpose is *Selaginella Kraussiana*, as it readily becomes established. The edge of the basket should be fringed with the same or the variegated form. Fresh sphagnum moss may also be employed for the same purpose. In the case of the baskets described above only the edge of the basket requires fringing, as the soil cannot fall out. The soil required for most Ferns is about two-thirds good peat and one-third of good fibrous loam, with a good addition of sharp sand; small lumps of charcoal added are beneficial, and a small portion of finely chopped sphagnum is good.

Having prepared the baskets for their occupants, it only remains for us to place them in proper positions where they can be seen to advantage; and here let it be borne in mind that they should not be placed so high as not to be fully seen, as is very frequently the case. Watering must be carefully attended to, never allowing the soil to become dry, and frequent use of the syringe is beneficial especially during the growing season. I scarcely need add that they should not be placed in sunlight without artificial shading of some description, employing moveable shading where practicable. The following list, by no means exhaustive, includes many of the best of the species suitable for growing in baskets.

Adiantum affine is a lovely species from New Zealand, with shining fronds from 9 to 15 inches long, very gracefully curved. *A. assimile* much surpasses the last for growing in baskets, the fronds being 6 to 12 inches long, smooth, bright green, and produced in great abundance, drooping very gracefully. *A. caudatum* is also a most distinct and beautiful plant. *A. colpodese*, *A. concinnum latum*, *A. excisum multifidum*, and *A. tenerum* are all excellently suited for culture in baskets. *Asplenium cuneatum* is a very elegant species and easily managed, requiring a stove temperature. *A. cicutarium* is also a very handsome Fern with gracefully curved fronds. *A. furcatum* is a very distinct species, which succeeds well in an ordinary greenhouse temperature. *A. longissimum* is a Javan species of Messrs. Veitch's introduction. It is one of the most beautiful basket Ferns we know, with gracefully drooping fronds 2 to 4 feet long, and 4 to 6 inches broad, of an elongated lanceolate form, and proliferous at the extremities. *A. viviparum*, a beautiful Fern which requires a stove temperature, and is readily increased by the buds which are formed on the older fronds. *Davallia canariensis* is a Fern which everybody can grow; it flourishes well in Fern cases and the coldest greenhouses. *D. dissecta*, also a well-known and beautiful species. *D. elegans* is quite distinct from the last, the fronds being 1 to 2 feet long, broad and deltoid in outline. *D. Tyermanni* is a pretty small-growing species, much esteemed and well adapted for baskets.—T.

CARTERS' FERN-LEAF PARSLEY.—I inadvertently omitted mention of this Parsley in my remarks on "Vegetables in 1879" (page 76). It is really a very desirable, handsome, and distinct variety, and when well grown is particularly attractive

and useful. All varieties of Parsley delight in a rich soil, and are much improved if allowed more space than is usually given. Single self-sown Parsley plants about the garden prove this, as they mostly are very superior. This I attribute to three things—rich soil, good open position, and plenty of space. Similar treatment is necessary to have the above in perfection. W. IGGULDEN.

LATE AUTUMN PEARS—BEURRÉ HARDY.

WHAT may be termed October Pears are so numerous and excellent that it is not at all easy for the amateur who only

requires a limited selection to choose those that are the most likely to suit his purpose. Although the variety figured cannot be described as the "best," any more than can any other valuable Pear of its season, it may yet be included amongst the most useful. It is a fine fruit of good appearance and of excellent quality, while few varieties grow more freely and healthily—a point of no small importance. It forms a fine wall tree, but it is only in late districts that it requires the aid of a wall. In most localities it forms splendid espaliers when worked on the Pear stock, and on the Quince it forms handsome pyramids. We have not had experience of it as a standard, but we know of no reason why it should not succeed

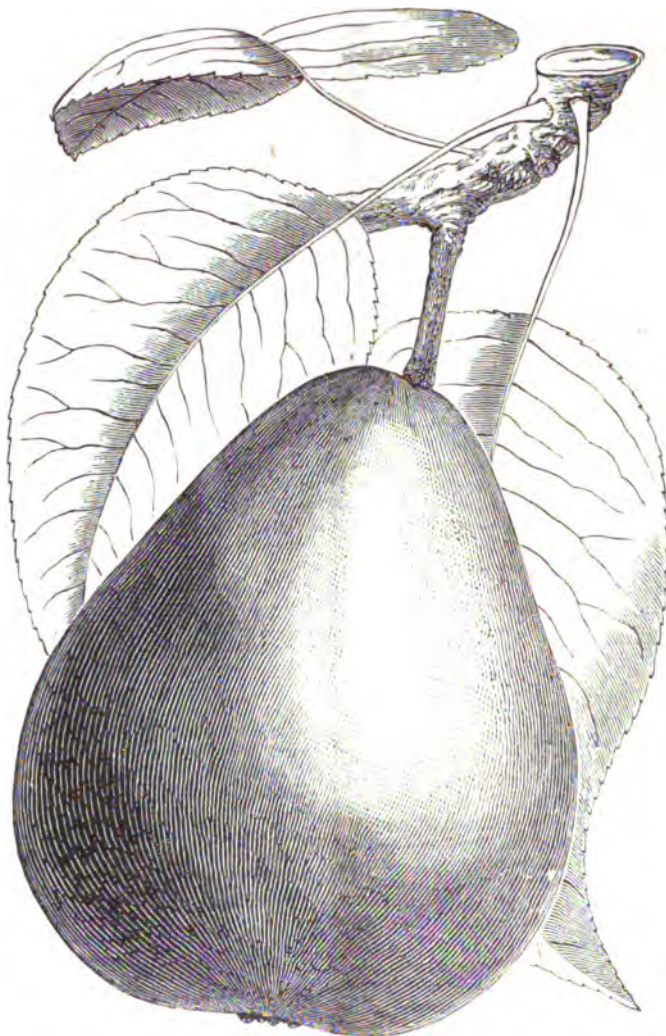


Fig. 21.—BEURRÉ HARDY.

when thus grown, and possibly some of our readers have proved that it will do so.

Beurré Hardy was raised by M. Bonnet of Boulogne, the friend of Van Mons, and was first distributed by M. Jamin of Bourg-la-Reine near Paris, who dedicated it to the late M. Hardy, Director of the Gardens of the Luxembourg.

LIBONIA FLORIBUNDA.

THIS is a very beautiful winter-flowering plant, and yet it is seldom seen well grown. Small bushy plants laden with their pretty orange scarlet tubular flowers are valuable for dinner table and room decoration, producing a very charming effect. It is also suitable for arranging amongst other plants in the conservatory. Unless large specimens are required small plants are the most useful for general decorative purposes.

After flowering they should be pruned and placed in heat. The young shoots when an inch long make good cuttings, and should be inserted in light sandy loam, the pots being placed in a moist gentle bottom heat. When the cuttings have rooted they should be transferred singly into 2½-inch pots, employing a compost of two parts turfy loam, one part leaf soil, and one part well-decomposed manure, with plenty of sand to render the soil porous. After potting the plants must be kept in a close house and shaded for a few days; afterwards assign them positions near the glass, with full exposure to the sun, in a temperature ranging from 65° to 75°. Syringe them twice on fine days, and frequently pinch the points out of the shoots to induce the plants to become dwarf and bushy. As they increase in size they must be potted on, employing pots an inch larger each time. About the end of June they may be gradually hardened off and placed in cool pits or

frames, which must be ventilated freely on bright days, and supply the plants with plenty of water; liquid manure may also be given two or three times a week with beneficial results. About October the plants must be taken in the greenhouse, where they thrive in a temperature from 45° to 55°. By the end of November they will commence flowering, and will remain in great beauty till March. This plant is worthy of a place in every collection, and all who have not yet grown it will be well repaid by giving it a trial.—JAMES SKYRME, *Ellergreen, Kendal*.

VEGETABLE FIBRE.

LORD PALMERSTON once said that "dirt is a name for manure in the wrong place," meaning, doubtless, thereby that much that is considered worthless refuse could be turned to profitable account. Amongst the most valuable of manures or fertilisers is vegetable fibre. How often have we heard the remark that "the Vines succeeded very well as long as the fibre of the soil lasted: after that was gone the Vines became unfruitful." How truthful are such reports! How can Vines bear without food? and they do not obtain much from the soil. If the Vines and crops of a large vinery were burnt into ashes, the small heap of ashes remaining would be the representative of the mere soil after the fire had consumed the great heap of vegetable fibre—in other words the organic fertilising matter. The soil in a sense is the vehicle of food, but not itself the food of plants. Plants, trees, forests, grow in land without lessening its bulk to a perceptible degree, and where crops are not taken they enrich the soil rather than impoverish it. How soon the roots of trees find and feed upon the vegetable matter in heaps of sweepings from gravel walks and rubbish of all kinds. Even a garden of sand becomes fertile soil by the application of manure and vegetable matter.

In Lambton Castle gardens we are told that Mr. Hunter has the Vines of one house growing and bearing well in a border without soil, made wholly of manure and leaves. The half of good stable manure itself is vegetable fibre in a decayed and decaying state. Some forty years ago I demurred to a statement made in Lindley's "Theory of Horticulture"—viz., that Vines and Roses have never been known to be overfed or to be planted in a border too rich. Late in life I have found that the doctor was correct in his statement. A few years ago I saw a house of young Vines which had been planted from pots that year in a border of decaying vegetable refuse, and they were bearing bunches weighing 3 and 4 lbs. each, and finer berries of Black Hamburghs could be rarely seen. The Vines have borne good crops since.

Vegetable fibre of all kinds should be carefully gathered and preserved, and when employed in a kitchen garden it will be found to be manure in the right place. I remember Mr. D. Thomson converting an unmanageable garden of clay at Dyrham Park into one of fertility. The soil a foot deep or thereabouts was wheeled into heaps, mixed with wood, and burned like bricks. When the heaps were spread over the garden it looked like an old brick yard. A heavy coat of manure was first trenched in, then another layer of manure was dug in, and the result of all this toil was a workable fertile garden which produced good crops of all kinds. If I remember rightly Lettuces were as heavy as 8 lbs. each.

At one of the Manchester Shows Mr. Wm. Brownhill, a friend and neighbour of mine at Sale, took the honours for Pansy flowers which were exceptionally fine. I called to see his Pansies growing, and I was surprised at their size and beauty. They were in a border rich enough to make them grow like Potatoes in rankness. Mr. Brownhill said he did not approve of rich borders for Pansies in winter owing to the liability of the plants to damp off at the roots. For large flowers, large fruit, and large vegetables let plants have large supplies of manure and vegetable fibre.—A. PETTIGREW.

IRISES.—No. 1.

SCARCELY any genus of hardy plants comprises so many really beautiful species and varieties as the one to which we now direct attention; and it is to be regretted that with all their diversity of colours and their interesting associations Irises are not more generally grown. By a judicious selection we can ensure a succession of flowers from early spring until late summer, which is of considerable importance where a portion of the garden is devoted to the mixed border.

The elegant and charming Xiphions, or bulbous Irises, com-

mence the floral round in February and March, when gardens usually bear a desolate appearance. Following these come the multitudinous rhizomatous forms, and the flowering season is brought to a close with the English bulbous Iris. When, in addition to the duration of the flowering period, we consider



Fig. 22.—Xiphion (*Iris*) *reticulatum*.

the astonishing variety of colours in the genus, the diversity of habit, and the highly attractive appearance of nearly all the species and varieties whether planted singly or in masses, it becomes somewhat surprising that with the exception of a few common forms Irises are very poorly represented in the majority of gardens. This is possibly due to the fact that many of the species are somewhat expensive owing to their increasing rather slowly; but there are plenty that can be obtained at moderate prices nearly if not equally as ornamental

as their more costly relatives. Another fact which perhaps has militated against the extensive culture of these plants is the carelessness with which many persons commence to grow them. Heavy soils, undrained borders, and inattention to lifting the plants cause the death of numbers, and ultimately their cultivation is discontinued on the plea that they are so difficult to manage. All this might easily be remedied. The only Irises that can be said to be in the least difficult to manage are the bulbous species, and these succeed best in a peat soil, the border being well drained, and if in a moderately warm position so much the better. The rhizomatous species generally thrive freely enough in an ordinary light rich soil, while some succeed on the margins of lakes or in any marshy situation.

The species represented in the annexed engraving is one of the early-flowering forms, and is included by Mr. Baker in the genus *Xiphion*, which he distinguishes from *Iris* by the possession of a tunicated bulb instead of a rhizome. It is a native of Persia and Asia Minor, whence it was first introduced to this country in 1821. It has been most deservedly characterised by Sir Joseph Hooker as "one of the most beautiful species of *Iris* in cultivation." The outer segments of the perianth or falls are of a deep rich purple hue and marked with bright orange in the centre, while the inner segments or standards are of a violet tinge. The flower exhales a delicious fragrance, which is somewhat suggestive of Violets. In a warm well-drained border of peat this plant succeeds admirably, producing its flowers about the same time as *X. histrio*—viz., usually in February, and continuing attractive until April. It is well suited for planting in masses, an instance of which we saw last year at Mr. Ware's nursery, Tottenham, where several large beds were entirely occupied with *X. reticulatum* and the delicately tinted *X. persicum*, producing a most agreeable display. The former, as it rarely exceeds 8 or more inches in height, may also be grown in pots in a cool frame or house, and is of great service for arranging on the shelves of the conservatory or greenhouse during the early months of the year, the fine deep purple tints of its flowers contrasting most pleasantly with lighter shades of colour. When in beds the plants should be lifted every two or three years, for, as the young bulbs or offsets are formed below the old bulbs, they are constantly descending deeper into the soil. One variety of this species is known—viz., *Krelagei*, which is distinguished by the somewhat duller colour of flowers and diminished fragrance.

The specific name is derived from the netted appearance of the bulbs.—L.C.

REVIEW OF BOOK.

The Rosarian's Year-Book, 1880. Edited by the Rev. H. HONYWOOD D'OMBRAIN. London: Bemrose & Sons.

LATE indeed has been the issue of Mr. D'Ombrain's "Year-Book;" but though it is late it is one of the best we have hitherto had the pleasure of reviewing. A better shilling's worth we can scarcely find than this pleasant little annual, and we hope that it may have a large sale.

The list of contributors is very good; there is far less padding than usual, and what little there is comes from the pens of those who have least excuse for writing twaddle. The principal contributors are Mr. George Paul; Mr. Mawley, the Hon. Secretary; Mr. George Baker of Beigate; Canon Hole, the President of the National Rose Society; the Rev. Alan Cheales; Dr. Henry Bennet, who gives us a most interesting article of winter Roses on the Riviera; Mr. C. H. Hawtreys of Slough, who sings the song of the woes of a local Secretary to the National Rose Society; the Rev. J. M. Fuller who gives us a short but interesting account of his garden; and the Rev. E. N. Pochin a most characterising paper entitled "A Buddhist's Idea." Mr. Hinton of Warminster handles a theme he is so well enabled to treat of—viz., New Exhibition Roses; and the Editor winds up the book with a short epitome of the doings of the National Rose Society during the last year.

The most important articles and the most valuable and instructive are undoubtedly those of Mr. George Paul on "The Survival of the Fittest;" and Mr. Edward Mawley's two articles on the Rose weather of 1879 and the winter of 1878-9. These alone are cheap at a shilling; and if the entertaining articles of Canon Hole, Mr. Cheales, and Mr. Fuller were absent the book would still repay the small outlay. We cannot imagine anything more valuable than Mr. George Paul's article under the strange title of "The Survival of the Fittest." Mr. Paul recognises fully the importance of the non-exhibiting class of Rose-growers, seeing that they number twenty to each exhibitor, and

so he takes the trouble to tell them what Roses are the most likely to repay them by their endurance and general health. He kindly invites the readers to accompany him to his own nursery; he points out to them there a space of ground which has yearly been devoted to the growth of about 1200 Roses worked upon dwarf standard Briars. He then gives a list of the Roses he worked on these stocks in 1872, which include all the best Hybrid Perpetuals and Teas, and then in parallel columns he leaves a blank for those which have succumbed, and places the names of the survivors in 1879 with some short note—e.g., "John Hopper, very thriving and well;" "Maréchal Vaillant, very good plants still." It would take up too much space were we to give a list of the survivors, but we may refer our readers to the book itself, assuring them that they will there find a guide which, if not infallible, may be relied upon with the most confident expectation that they will see there the healthiest, most enduring Roses.

Mr. Paul then gives the result of another year's budding, with, strange to say, the same results with the exception of a few additions. He also tells us that English-raised Roses have been proved to be among the most enduring. Boule de Neige he believes to be the hardiest white, Madame Berard and Gloire de Dijon being the most lasting of the Dijon race, and the La Reine section of Hybrid Perpetuals the most enduring and vigorous.

Mr. Edward Mawley, F.M.S., gives us the results of his carefully noted tables of the weather of the past Rose year. He divides his year into the ripening, the sleeping, the awakening, and the blossoming seasons, and gives us a most exhaustive treatise. He also has taken the trouble to collect statistics from thirty well-known rosarians as to the winter of 1878-9, and he compares and classifies those returns with great skill.

Mr. Pochin gives us some very good advice as to selecting strong and healthy flowering shoots from which to cut our buds for propagating; while Mr. Cheales, evidently labouring under a difficult task, tries to advise us as to cutting Roses for exhibition. The great and fundamental advice appears to be to cut dry—that is, when the dew is off the blooms. This is diametrically opposed to the advice of veteran Rose-growers who have won hundreds of prizes, and who always cut with the dew on, even though they had to cut twenty-four hours before the show. We well remember the late John Keynes of Salisbury earnestly imposing upon us the absolute necessity of doing this, and we think that at the present time most of the great nurserymen follow this practice; at the same time we allow that to cut while heavy dew is on the blooms is a dangerous practice, for most Roses look fresh and bright and good under such circumstances, and unless we choose very young blooms we shall find the Roses soon fall to pieces. If Roses are cut in the very early morning when each bloom is full of dew, the only safe practice is to carry the boxes into some dark cellar and to leave the covers off till the time for departure. This practice in our opinion will prove far more efficient than cutting at three o'clock in the afternoon in a broiling sun.—WYLD SAVAGE.

THOUSAND-HEADED KALE.—During the past and present winter but few of the crops of this very hardy Kale grown in the vicinity of London have been used for sheep-feed as originally intended, speculators having given high prices for them to send into the London markets. Greens of all kinds are more scarce at present than they were during the winter of 1878-9, and the prices realised for good crops have been almost fabulous. The highest price obtained for Thousand-headed Kale that I know of has been £15 per acre, which, however, is a rather risky speculation, especially taking into consideration the distance of the crop from London—viz., forty miles. It is not particularly good, Rape even being very superior to it, and would not pay the cost of carriage to the markets during the generality of winters.—W. IGGULDEN.

NOTES ON VILLA AND SUBURBAN GARDENING.

KITCHEN GARDEN.—The month of January has been an exceptionally dry one, in this respect presenting a very marked contrast to that of 1879. Should the weather still continue favourable the ground will be in excellent condition for the first sowing of Peas, Broad Beans, and Spinach, on light soils especially. If the weather be showery, however, the sowing had better be delayed till the ground is in good working condition. Pea sticks in many places are expensive—so much so, indeed, as to cause many holders of suburban gardens to give up Pea-growing. This is to be regretted,

and we recommend a trial of growing Peas without sticks. All Peas, or nearly all, sent to market are grown without sticks, and the crops are generally heavy, if not always remunerative. As before stated, Sangster's No. 1, and an improvement on it, Carotacus, are good for the work, both being largely sown in the fields; but William I. is superior to either, and will eventually supersede them. Any medium-height early Peas may be tried, however, and this is stated simply because many buyers must have what they can get from the local seedsmen. The ground must not be made very rich, or that will cause too luxuriant a growth, the reverse of what is wanted. A south border is the best for this sowing; falling this a sunny position must be selected. Sow thinly, either in double drills drawn about 5 inches apart and 2 inches deep, or in a wide single drill, the rows in each instance being about 30 inches apart. A pint of Peas ought to sow a row 25 yards long. Those who intend using sticks may dig in more manure and have the rows 8 feet apart, which will both benefit the Peas and also allow of a row of Spinach between each two rows. Sow the latter thinly in shallow drills. Broad Beans are usually sown in double drills 9 inches apart and 2 inches deep, and the rows 2 feet apart. Allow when sowing about 5 inches interval between the Beans. Early Longpod is the best for this sowing.

HOTBEDS.—It is a mistake for inexperienced amateurs to commence with these very early in the year; but where a single-light box frame is available it is advisable to prepare a small hotbed on which to place it, as it will be found very useful for raising Cucumbers and even Melons for larger frames, and other plants from seed and cuttings. Much depends upon a careful preparation of the materials previously to making them into a bed. Oak leaves and manure from the horse and cow yards are all used in mixture, especially the two first mentioned. The latter takes longer in preparation, but is the most lasting and is sweeter than horse manure. Either, of course, may be used alone, but should be thrown together, and after an interval of eight or nine days be turned, well watering it if heated dry. This should be repeated at least twice, in order to permit the escape of the noxious gases that are so injurious to plant life.

MUSHROOM BEDS.—Horse droppings only are used for these, and should be saved daily and kept spread open and dry till a good quantity is collected according to the contemplated size of bed, which will have to be made solid and at least 1 foot in depth. Any dark and tolerably warm shed will do for the bed, or it may be made in the open providing there is an abundance of protecting material. A bed in a cellar will undoubtedly produce Mushrooms; but we do not recommend the cellar of an occupied house, from the fact of its being against all sanitary laws, or, to say the least, extremely disagreeable.

GREENHOUSES AND CONSERVATORIES.—These structures will soon assume a gay appearance, seeing that Primulas, Cinerarias, Cyclamens, Carnations, Salvias, Callas, Violets, Lachenals, and other plants are at their best near this time. All the foregoing will if well established be benefited by an occasional dose of liquid manure. Gnano is very effective and simply applied, but must be carefully used, as if given too strong it will injure the roots. Use just sufficient to colour the water in the first instance. A little careful observation will best determine how much stronger it may safely be used. Never use water of a lower temperature than the house, and if it is at all hard it is very advisable to soften it by exposure to the air. Paraffin tubs cut in halves and burnt out are useful for this purpose.

Cyclamens.—These are scarcely as good as usual, and are very late in blooming. The old plants that were planted out during the summer and lifted in the autumn have done badly. To have them good in the first season they must be grown on quickly in the spring months; consequently those who cannot command heat, which is probably the case with the majority of the readers of this column, must rely upon their two-year-old plants for their best display. Good plants, however, may be had if the seeds are sown as soon as ripe in the autumn, the plants being potted and grown on in the spring.

Hyacinths.—These and other bulbs if properly treated will have been bedded in ashes at the potting time to induce root-action. They must be taken out before too far advanced; at the same time they must not be suddenly exposed to the light and air, or the blanched growth will be damaged. Cover with inverted flower pots, and gradually inure to the light.

Roses in Pots.—These should at once be pruned, following exactly the same system as that practised with the Roses outside—cutting out all spray, and shortening back all moderately strong growths to about three joints, and weaker shoots to one or two joints. The weaker the growth the closer it must be pruned. Trained specimens, unless exceptionally well managed, are soon exhausted. Strong shoots laid-in the full length flower well the first season, but are of little good the next. Roses should not be crowded in among other plants, or they grow weakly. Give them an airy position, frequent supplies of liquid manure as they advance, and keep them clean.

Zonal Pelargoniums.—Water should be gradually withheld from plants of Zonal Pelargoniums in pots, sufficient only being given at times to keep them from flagging, in order to prepare them for

cutting down. The shoots will strike all the better and the old plants break more readily for this ripening process. It will also give a good opportunity for repotting and laying the foundation for another season's display. Draw the lights off frames during bright days, and occasionally clean out and stir over the ashes on the bottom. Owing to being covered up so much the occupants of frames are very weak and need sunshine to strengthen them.

WORK FOR THE WEEK.

KITCHEN GARDEN.

PLOTS of ground intended for seeds should now be prepared, especially for Onions, Parsnip, and Carrots, which should be sown on the earliest favourable occasions. In the northern parts of the kingdom from the middle to the end of March will be a suitable time for these seeds. In sowing, drills are much to be preferred, being more economical in labour, and tending to promote regularity—a point worthy of some consideration in every well-managed garden. The ground intended for Onions should be well trodden down before the drills are made, and the treading should be repeated after the seed is raked in. Carrots and Parsnips succeed better when the soil is moderately firm. Onion drills should be 9 to 12 inches apart; Early Horn section of Carrots the same, and 8 inches more for the long varieties; Parsnips 15 inches to 18 inches apart. Brussels Sprouts and the Kales have withstood the severity of the winter better than other varieties of winter greens, and such practical facts should serve as a guide in future. A sowing for general requirements may be made at any time if the soil be suitable in a position with every advantage of sun and air. Broccoli of the autumn and early winter varieties may also now be sown, but the main sowings should be deferred until early in April, though, where the soil is poor and exposed, the varieties for spring use may be sown in March. Sow Leeks for the general crop in drills about 15 inches apart, also Parsley. Shallots, Garlic, Potato Onions; also Onions for scallions or seed, should now be planted. Autumn-sown Onions and Lettuce, which have been wintered in the seed beds or otherwise, should be transplanted into rich firm soil. Sow successional crops of Peas and Broad Beans. Plant Mint in rich soil in a sheltered situation, which if done annually about this time will insure a good early supply. Plant Ashleaf Kidney Potatoes; Veitch's and Myatt's are the best on a warm border, and a row about a foot from the base of a south wall. Sets that have shoots about half an inch in length are most suitable as insuring regularity of growth. Where there are pits to which coverings can be applied Potatoes may be planted, and will be fit for use a fortnight or more before those on warm borders. If a sowing of Radishes and Carrots be made in cold frames or pits they will precede those sown in the open, and prove useful. The seed may be sown in alternate rows at about 4 inches apart.

Forcing Department.—When fine freely ventilate frames containing early-sown Radishes, Carrots, and Potatoes. Sowings of Radishes, Carrots, and plantings of Potatoes may yet be made in frames over beds of fermenting materials. Keep the lights entirely off Cauliflower plants whenever the temperature is over 85°, but close the frames on cold nights, stirring the soil lightly about the plants, and if they are growing freely afford liquid manure. Sow Mustard and Cress as often as necessary. Tomatoes, Capsicums, and the very early Celery should be potted off singly in 8-inch pots, or the Celery may be pricked out in frames, keeping the plants near the glass in a house with a temperature of 55° to 65° by artificial means, and on no account allow them to become root-bound. Continue to maintain the supply of Rhubarb, Seakale, and Asparagus by the introduction of fresh roots. Where Asparagus is forced in permanent beds, and there are two or more sets of beds, so that they are forced only in alternate years, they answer very well. The spaces between the beds should now be filled with fermenting materials, and the shutters or other means of covering the beds placed on. If other beds are started in succession a good supply will be had until the beds outside come into bearing. Indeed, by covering the beds now with span-roofed frames, and not giving any air, heads will be produced a fortnight before those outside. After the heads appear ventilation will be necessary when the sun is powerful. Peas sown on turves, &c., for planting out should be freely exposed to the air when the weather is favourable.

Mushroom House.—Beds made in early autumn will have borne their crops and should be renewed with as little delay as possible. In preparing the materials they should be spread out thinly and kept dry until a sufficient quantity is collected; then throw them into a heap, and when steam is issuing freely turn them over about twice a week, continuing until all excessive heat and undue moisture is expelled and not likely to produce a stronger heat than about 95° when made up. In making the beds the materials must be beaten together as firmly as possible. If there is no possibility of the heat not exceeding 90° the bed may be spawned at that degree or between that and 75°; but except when it is desirable to have the beds in bearing as soon as possible it is advisable to wait until the heat has risen to its maximum and commences falling, when the spawn may be inserted. Make holes about 9 inches apart and

2 inches deep, and place in each a piece of spawn about the size of a large walnut, pressing the surrounding materials closely and firmly around and over them. In the course of a few days the bed may be earthed by placing over it about 2 inches of rich turfy loam, which must be beaten down firmly. In the course of four to six weeks the Mushrooms will begin to appear, when the bed must be kept moist and the walls frequently damped. Beds in bearing will need to be sprinkled with tepid water as necessary to keep the surface moist, and this with a regularity of moisture in the atmosphere will tend to a regularity of produce in conjunction with an equable temperature of about 55° to 60° or 65°.

FRUIT HOUSES.

Figs.—The earliest forced trees in pots which are subjected to bottom heat will require to be regularly supplied with water, as neglect of this would now prove injurious to the crop. Syringe the trees morning and afternoon when the days are fine. If a second batch in pots is wanted the trees may now be started, and they will make a succession to the earliest forced, giving them the same course of treatment as has been already advised. The trees permanently planted out in houses where forcing was commenced early in the year will be making growth, and require tying to the trellis as they advance, and thinning out where too crowded, pinching the shoots which issue from the base of the fresh terminal shoots at the fourth or fifth leaf. Keep the night temperature at 55° to 60°, and 65° in the daytime by artificial means; commence ventilating at 65°, and allow the day temperature to rise to 75° or 80° from sun heat, closing at 70° with sun heat, allowing a free circulation of air when the temperature is over 70°.

Cherry House.—Continue following former instructions as to ventilation, temperature, and moisture. The trees are now expanding their blossoms. Artificial impregnation must be resorted to as soon as the flowers are in a suitable condition, which is best accomplished on bright sunny days when the house is freely ventilated, applying the pollen to the stigmas with a camel's-hair brush.

Peaches and Nectarines.—In the earliest house still attend to disbudding, and commence early to tie and regulate the young shoots as they advance in growth. Do not be deceived by the appearance of the surface of the inside border, for the daily syringing may make the surface appear moist whilst beneath it the soil is too dry. The young fruits are swelling fast, and to assist them occasionally supply liquid manure to the border, except in the case of vigorous trees. If red spider appears it must be promptly met by syringing with an insecticide. The night temperature may now range from 55° to 60°, and 60° to 65° by day artificially, with an advance to 70° or 75° from sun heat. The trees in the next succession—i.e., that started early in the year, will require attention in disbudding, which should begin as soon as the shoots can be rubbed off or removed with the finger and thumb. Continue to impregnate the blossoms, and when the fruit is all set a gentle syringing in the morning and at closing time will assist in removing the remnants of the blossoms. See that there is no deficiency of moisture in the inside borders. Where the fruit is too thickly set remove the smallest first, especially on the under side of the shoots. Admit air freely to late houses, and make sure that there is no deficiency of moisture in the borders.

Pines.—A batch of suckers will have to be started about the commencement of March to provide plants to give a succession of fruit from next December onwards; therefore attend to the preparation of soil for potting, and a fermenting bed in some close structure to generate and maintain a bottom heat of 85° to 90° near the surface, and with means of maintaining a temperature of 55° to 65° by fire heat with regularity. Plants which were selected about the beginning of last December and started by an advanced temperature and moisture will now be showing fruit; and as it is advisable to advance the ripening of the fruit of these plants as much as possible, the temperature about them should be maintained at 85° to 70° at night, and 5° to 10° more under favourable conditions in the daytime, opening the house at 80°, allowing an advance to 85°, and close at about that degree, utilising the sun heat as much as possible. With the fruit advancing the plants will require more water at the roots, examining the whole stock once a week, as with increased light and heat the need for water will correspondingly increase. Recently started plants to succeed those already named should have a night temperature of 65°, and 70° by day artificially, which will be sufficient for them for some time longer.

FLOWER GARDEN.

Although digging the ground deeply among shrubs acts prejudicially by mutilating and destroying the roots, yet lightly forking over imparts a fresh clean appearance. Before pointing the ground over it will be advisable to prune and thin out if necessary. In pruning regard must be had to the habit indicated by the various trees or shrubs, the object being to retain irregularities and equalise the growth. The bare ground among shrubs may be much enlivened by introducing early flowering plants and bulbs, as the Hellebores, Winter Aconites, Snowdrops, Squills, Crocuses, Daffodils, Primroses, Polyanthus, and Violets, planting them in masses. Herbaceous Phloxes when old do not flower satisfactorily, and should be taken up and divided, replanting after

well enriching the ground with manure. Herbaceous Paeonias, which are grand for shrubby borders, should when they become large be divided. Ground intended to be planted with Calceolarias, Violas, and other plants that require moisture, should be specially prepared by trenching it 2 feet deep, or as deep as the good soil admits, working in at the same time a dressing of decayed manure. Edgings of Oerastiums, Golden Thyme, and other hardy plants may be taken up and relaid. Rose beds in many places have some gaps owing to the plants being destroyed by the early winter frosts, and fresh trees should be planted as early as possible, deferring pruning them until they are swelling the buds freely. In sheltered situations the general pruning may be proceeded with, but in cold localities it is better deferred until the close of March. Wistarias, Clematis, Roses, and all climbing plants of a deciduous character should now be pruned and regulated, leaving the strongest and best ripened shoots to be tied or nailed in. Such Roses as Cloth of Gold, Marchal Niel, Climbing Devonians, and other free-growing varieties should have the best and ripest shoots laid in full length, except just the tips or unripe wood, as the flowers of these are borne on the young wood, and to spur them in would only result in a crop of shoots devoid of flowers. Beds of Clove and other Carnations, Picotees, Pale Pansies, &c., should be examined, cleaning and pressing down such as have been disturbed by frost, giving a dressing of soot and lime, and lightly stirring the surface between the plants.

PLANT HOUSES.

Ferns.—Potting should commence early, as if deferred until the plants are producing fresh fronds the young growth will receive a check, causing some of it to become stunted and deformed. The shifts given should be regulated according to the vigour of the plants and the purpose they are required for. If the object is to have them as large as possible they must have as much room as they require; but if desired to restrict the size of the plants they must be kept in comparatively small pots. It should be borne in mind that in a very humid atmosphere the plants will make very strong growths in small pots, but the growths so made are of very little use for cutting. The Ferns most in request for cutting are the Adiantums, particularly *A. cuneatum*, *A. gracilimum*, *A. formosum*, and *A. assimile*, and the Pterises, which should be grown in an airy house with plenty of light, and instead of overpotting allow them to become somewhat rootbound, which will also render the fronds firmer in texture. Good peat is suitable for the majority of Ferns with a free admixture of sand, and for the small Ferns a sixth of broken crocks may be added, in all cases providing good drainage.

Stove.—The propagation of many stove plants is deferred very often until late in the spring, when they are neither so easily struck nor have the plants time to ripen their growth before autumn. Allamandas, Bougainvilleas, Clerodendrons, Dipladenias, and others that were started at the commencement of the year will have formed shoots, which when about 6 inches long should be taken off with a heel and inserted in a soil of peat and sand in small well-drained pots. If placed in a brick bottom heat and shaded from bright sun they will root quickly. Gardenias, Ixoras, Tabernaemontanas, Rondeletias, Aphelandras, and others of similar character should also be taken off with a heel. Cuttings may also be inserted of such plants as *Aeschynanthuses*, *Hoyas*, *Eranthis*, *Plumbagos*, *Hibiscuses*, and *Mussaendas*. Cuttings of *Euphorbia jacinthiflora* for early flowering may be inserted when the young shoots are 4 to 6 inches long. Small plants of *Laelia gratissima* in small plants are very useful for decorative purposes, and some cuttings inserted now will flower early, and by inserting some later a succession of flowers will be had. Any *Crotons* that have become tall may be headed back and kept rather dry; they will break freely. The shoots of about 10 inches length when inserted in sandy soil and plunged in brick moist heat will soon produce roots.

TRADE CATALOGUES RECEIVED.

James Yates, 29, Little Underbank, Stockport, and Southwark Street, London.—*Catalogue of Flower and Vegetable Seeds and List of Gladioli.*

J. T. Riches, Lower Tooting, S.W.—*Catalogue of Flower and Vegetable Seeds.*

Arnold Puetz, Jacksonville, Florida.—*Catalogue of Plants.*

TO CORRESPONDENTS.

* * All correspondence should be directed either to "The Editor" or to "The Publisher." Letters addressed to Mr. Johnson or Dr. Hogg often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

BOOKS (J. T.).—You will find the "Garden Manual" published at the office suit you. It contains all the needful information for small gardens. Sent by post for twenty-one stamps.

COMPOST FOR *FUCHSIA FULGENS* (D. L. G.).—It succeeds in turfy loam, with a third of leaf soil or a fifth of thoroughly decayed manure and about a sixth of sharp sand. The spray sent is not a Fern but a *Lycopodium*, *Belagialla cnele*.

GARDENIA FLORIDA UNHEALTHY (J. P.).—The above is the name of the spray you have enclosed. Your plant is in a very unhealthy state owing to defective root-action or a too low temperature. It requires a warm stove temperature of not lower than 65° at night and a moist atmosphere, and if the pot can be plunged in a bottom heat of 80° it will be of great benefit. It should be potted in a clean well-drained pot, using turfy peat and silver sand until fresh roots are produced, when a stronger compost may be employed. Water carefully, and syringe the plants twice a day during favourable weather.

GLASS FOR CUCUMBER HOUSE (W. Adams).—Clear 21 on. seconds will answer your purpose much better than rough glass. If a slight shade is required during hot weather a little linewash applied to the glass with a syringe will prevent scorching, and the first heavy shower will render the glass clear again; but with good soil, judicious watering, and careful ventilation we seldom find it necessary to shade Cucumbers.

CLAY'S FERTILIZER (A Young Gardener).—The best evidence of the value of this fertilizer is the fact that it is largely used by nurserymen and the principal growers of plants for the London market. We have tried the measure, and find it an excellent and lasting stimulant for all kinds of plants in pots requiring more support than the soil and clear water affords them. It should be lightly sprinkled on the surface of the pots and watered in. It is equally good for outdoor crops both of flowers and vegetables, and may be used in the same form and quantity as guano.

DISEASE-RESISTING POTATOES (J. A.).—Your communication cannot be inserted, as it is not accompanied with your name and address; nor do you state where the Potatoes were grown.

FLOWERING CLETHRA ARBOREA (R. C.).—The Clethras you referred to, which have bloomed so freely lately, are growing in similar compost to your own—viz., sand and loam. In this respect your treatment is correct; but if you keep your plants in the greenhouse all the year round, or shade them in any way in summer, this will prevent them from blooming, as it is very necessary that the flowering wood should be thoroughly ripened in autumn. To insure this the plants are grown out of doors from the middle of May until the middle of October, and after then they bloom quite naturally throughout the winter, as is stated on page 84. Place your plants out of doors this summer, have the wood well ripened by the end of September, and you will have plenty of flowers next winter.

SAWEED FOR STRAWBERRIES (J. E.).—We have employed saweed as a manure, and have always found it beneficial not only to Strawberries but to all kitchen garden crops.

ALAEIA SHOOTS MATEN (C. T. B.).—The shoots appear to have been gnawed by rats or mice. We have known rats gnaw Vine stems through, and destroy the fronds of Ferns in numbers. Try a few spring traps. There is evidence of thrips on the leaves, which may be destroyed by fumigation with tobacco.

BROCCOLI FOR SUCCESSION (Young Subscriber).—To have a succession from September to June sow Walcheren early in April, and at the same time Vetch's Self-protecting, Backhouse's Winter, and Snow's Winter White. The heads of the three last will be destroyed if the weather be severe, hence the plants should be lifted when about the size of a teacup, and laid-in in a pit or frame where they can have protection as required. Sow about the middle of April Vetch's Spring White, Cooling's Matchless, Leamington, Leader's Goshawk, and Model. If the spring be early you will require to take up some plants of the last two varieties when the heads are well formed, and lay them in on the north side of a wall to retard them, as the heads will not last until June in a forward season.

ROSES ON THEIR OWN ROOTS (E. R. L.).—It will not answer to divide your dwarf trees into "five or six pieces" unless they are divided below the soil so as to retain a number of roots to each portion. If they are dwarf-worked plants make cuttings of the growths of the current year immediately the flowers have fallen. Take the cuttings off with three joints, cutting transversely below the lowest leaf, and insert them in a shady border and cover with a handlight or frame, which should be kept close until the cuttings are growing freely or have rooted, when air should be freely admitted. Or cuttings of firm wood of the current year may be inserted on a shady border in September, and the following April they may be carefully lifted and planted in good rich soil.

CLIMBERS FOR CONSERVATORY (W. H.).—Bignonia Ohirire, B. jasminoides; Passiflora Comte Nesselrode, Imperatrice Eugénie, cærules racemosa, Comtesse Gréguin; Tacsonia Van-Volkenal, and T. insignis. Roses would succeed in the lightest part, but not if dark. Such free growers as Marechal Niel, Belle Lyonnaise, Catherine Mermet, Climbing Bevoisensis, Madame Denis, Père de Lyon, Sombrell, &c., should be chosen. L'apagaria rosea and L. alba should not be omitted, they would do well on the shaded part. Roses for a south-east wall are Cheshunt Hybrid, Coquette de Lyon, Jean Ducler, Madame Docteur Jitte, Madame Hippolyte Jamin, Mrs. Opie, Maria Staley, Narcisse, Niphotea, Sombrell, and Vicomtesse de Camille.

FRAGRAS AND NECTARINES (Idem).—Peaches: Early Beatrice, Hale's Early, Dr. Hogg, Grosse Mignonne, Noblesse, Royal George, and Barrington. Nectarines:—Lord Napier, Mirage, and Violette Hâtive.

JATROPHA URUBES (W. Prior).—The plant you mention is grown at Kew either in the Palm stove or conservatory house. It is remarkable for the stinging hairs which cover the leaves, whence the specific name is derived.

INDIAN PLANT (A Constant Reader).—We know of no plant of the name you have submitted, neither are we able to determine the name of your plant from the description you have given of its seed pod.

VINES BLEEDING (Part III).—It is comparatively easy to prevent Vines bleeding, but not by any means so easy to stop the outflow of sap when it is considerable. Dry the ends of the Vines by means of a heated iron, and dress them with Thomson's styptic, rubbing it well in. A correspondent states in our issue of January 22nd that common shellac varnish is also efficacious. We once saw the sap arrested by a wire ligature fastened very tightly round the ends of the Vines, which were then thickly covered with red and white lead.

BOILER UNHEALTHY (J. P. A.).—We have seen boilers similar to yours answer very well. The draught should be regulated by the saltpetre door, the other parts round the bottom of the boiler being enclosed with brickwork, and a lid being affixed on the feed aperture. Provided you do not fill the cylinder too full of fuel the smoke ought to escape by its proper outlet; and with a bright fire there should be no difficulty in consuming broken coals. We have never seen a fire having a good draught that will

not burn coals. A gardener on inspecting the boiler might be able to make a suggestion that would be useful to you. The smoke outlet ought to be in connection with an upright pipe or flue; if it extends far in a horizontal position the smoke will not escape freely.

PLANTING FLOWER BEDS (W. L.).—We do not undertake to supply designs for planting beds, but only advise on modes of planting that are submitted to us. If you send a clear sketch of the beds and the proposed plan of planting the subject shall have our attention.

APPLE (H. Knowles).—If you will inform us of the district in which the Apple to which you refer was cultivated, also the period of the fruit ripening, we shall be better able to answer your question. The Apple, however, may only be a local variety.

ZONAL PELARGONIUMS (J. H.).—You will find an account of plants with large trusses of flowers and how they were produced on page 91 of vol. xxxiii. If you are unable to refer to the article in question you can have the number containing it sent from this office in return for 3d. in postage stamps, by requesting the publisher to send you No. 883 of the *Journal of Horticulture*.

CEDAR OF LEBANON (J. H.).—It is regarded as rather a slow-growing tree, but when planted in suitable soil it makes very free progress. Mr. Robson has recorded the following sizes of a group of eight trees in Linton Park, Kent, which at the time of their measurement had been planted forty-four years. Girth of stems at 3 feet from the ground, 9 feet 3 inches; 8 feet 11 inches; 8 feet 8 inches; 8 feet; 7 feet 11 inches; 7 feet 6 inches; 7 feet 5 inches; and 6 feet 6 inches. The spread of branches of the largest-stemmed tree was 69 feet. On page 11 of vol. xxvii. is an illustration of a Cedar of Lebanon at Normanton Park. This tree is nearly 100 feet high, and is supposed to be about two hundred years old. You will find much of interest pertaining to the Cedar of Lebanon in Nos. 692 and 718 of the *Journal*, which can be obtained from the publisher for 3d. each. Cut back the old Yew when it commences making fresh growth in the spring.

NEPENTHES AND ANTHURUM PROPAGATION (A Young Gardener).—Nepenthes are easily increased by cuttings, which should be singly in small pots in sphagnum moss or sand and fine potash, or they may be inserted in a bed of cocoa-nut fibre. In any case they must be kept in a close humid highly heated pit until they have produced roots. The Anthurium is propagated by offsets kept close for a time in a propagating frame. We cannot understand your question relating to the greenhouse. Peach trees would succeed if well exposed to light.

BELGIAN POTATOES FOR PLANTING (Strawson).—A great quantity of these Potatoes were imported during the autumn and winter of 1878 in consequence of the virulence of the disease during the previous wet summer. In 1878 we inspected some garden allotments where many cottagers had planted Belgian Beds rather extensively. The soil was medium to strong loam. The crops in every instance were unsatisfactory, the tubers being much misshapen and the quality inferior. None of the Potatoes were planted a second year. We have not had experience with planting Potatoes imported from Germany and known as German Blues.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

LAYING DOWN LAND TO PERMANENT PASTURE.

(Continued from page 127.)

As we most approve of forming pasture by sowing the seeds upon a fallow preparation we will make a few observations as to the manure to be applied. In the event of the land being of a loamy or mixed nature the fallow should be made with as much care and labour as is usually bestowed upon land intended for wheat, turnips, or any other crop requiring a fallow preparation. After a clean surface has been obtained, if yard dung or compost is used it should be spread carefully and ploughed-in, and the earth from the cattle pen, floors, and box dung mixed well together we find extremely well adapted for pasture land. There is no better time for sowing than the latter part of August or early part of September. The surface cannot be made too fine, and as we always purchase our seeds to order we prefer to sow the heavy seeds and light seeds separately, for which Bennett's broadcast seeding barrow answers excellently. To insure a correct application of the seed we prefer that the heavy seed be sown at once, but the light grass seeds require more equal distribution, and therefore we sow these at twice, lengthways and crossways. If the seeds are not sown until the time named above we do not object to artificial manure being ploughed in shallow, because, unlike sowing in the spring, it will not make the weeds grow enough to overpower the young grass.

The following is an instance of laying down a field of light and gravelly land that we took poor, but tolerably clean after turnips, which had just been cut and saved for seed. The land was then (the end of July) ploughed rather shallow, worked down very fine, and directly afterwards run back with the plough and worked down again; the land was then as fine as dust, and nearly as dry. During the latter work we manured the land with 2½ cwt. of

Peruvian guano and 8 cwt. of bone superphosphate per acre. About the middle of September we sowed the seeds by hand. Heavy seeds:—Yellow Suckling, 6 lbs.; Yarrow, 8 lbs.; Permanent White Clover, 8 lbs.; Timothy Grass, 8 lbs.; total, 18 lbs. Light seeds, 6 lbs. of each of the following:—Meadow Foxtail, Hard Fescue, Meadow Fescue, Cock's-foot, and Pacey's Perennial Rye Grass; total, 80 lbs. This is rather more seed than is advised generally, but nothing can surpass the result, for it is now a splendid piece of pasture attached to a villa, we having sold the property away from the estate. It will be noticed that each of the sorts of grass will hold on well, not only as a permanency, but the yarrow, which carries a capital leafy herbage, will flourish and show quite evergreen in the hottest of summer weather; this seed can therefore be well applied at all times in adding to park lands if the soil is very dry. We must notice here that the cost of these seeds per acre was 51s. This outlay, of course, cannot be justified, except under like circumstances, and with the same objects in view. Within the last few years we have, however, selected grass seeds for various farms of different soils at a moderate cost. We give a list here:—Yellow Suckling, 6 lbs.; Permanent Dutch, 4 lbs.; Timothy, 6 lbs.; total, 16 lbs. heavy seed. Cock's-foot, 4 lbs.; Hard Fescue, 4 lbs.; Meadow Fescue, 4 lbs.; Pacey's Perennial, 8 lbs.; total, light seeds, 20 lbs. This will answer very well upon loamy and mixed soils, and not exceed 80s. per acre, often several shillings less. Even at this price it is costly if many acres are laid down. An instance of this occurred to us a few years ago. We purchased the seeds for about 90 acres, the mixture being much like the one just given, the cost being 29s. 9d. per acre.

There is another matter relating to the cost of laying a large area into pasture. We know that in case all the land has to be fallowed for the reception of the seed it is not only costly but takes time as well. For instance, supposing it is determined to lay into pasture, say 150 acres, it is not very likely at short notice that it could all be seeded as a fallow preparation. We may, however, find on a farm, say 50 acres of clover lea, either one or two years old; in either case, if the soil should be free from couch grass, there is no reason why the lea ground, instead of being broken up for wheat, should not be renovated, and thus bring it into permanent pasture some years sooner, and as we have often acted upon this plan we will here speak of the time and method of doing it. We give the list of seeds we use for this for an acre:—8 lbs. of Cock's-foot, 8 lbs. Pacey's Perennial, 2 lbs. Hard Fescue, and 2 lbs. Meadow Fescue, being 10 lbs. of light seeds; 8 lbs. of Timothy, and 8 lbs. of Yellow Suckling, being only 6 lbs. of heavy seeds. These will cost about 16s. per acre. The best time for sowing the renovating seeds is as soon as the hay can be carted off; sow the seeds over, then heavily drag the land, which will not injure the growing grass, but will bury the newly sown seed perfectly—at least, the work must be continued until there is plenty of loose earth to nourish the young plants. The only enemy will be the little white slug, which for several years past has committed great havoc amongst all young grass seeds.

We shall have to be extremely cautious this year in the purchase of grass seeds, because there is no doubt that large quantities were imperfectly ripened. Many of our seeds we are always obliged to obtain from the continental States. Germany is quite celebrated for the care and intelligence used in the propagation and sale of the meadow grasses. When the grass seeds are quite buried 1 cwt. of nitrate of soda and 2 cwt. of bone phosphate per acre should be sown over, and the land rolled with the ring roller twice, lengthways and crossways; it is, in fact, too often the cause of failure when the land has not received sufficient harrowing, rolling, &c. In autumn the old lea grass will be getting strong, and may to some extent overshadow the seedlings; as soon, however, as the young plants have been up about a month the grass may be fed off by yearling cattle or calves. These will crop the old grass, and leave the young grass uninjured; on the other hand, if fed off by sheep they would destroy the whole succession.

Let us now revert to the best method of manuring any land which may have been laid into grass, and also the plan most in favour for clearing the crop from weeds. Our principal reason for deferring the seed time until August or September is because the young grass will often be injured by weeds, such as charlock, docks, thistles, &c., when, however, late sown, so as to just cover the ground at the middle of October, no weeds will be so strong as to injure the seeds that year; nor do we approve of applying any manure until the following spring, and then a dressing of guano and bone phosphate or a part nitrate of soda are the best we have found for the purpose. We do not think it advisable until the grass is strong and quite established to apply yard dung or compost, but after the third year a full dressing of heavy manure is the best application, especially as it serves to assist the natural and indigenous grasses to take possession much more than artificial manures. We have known some farmers who would ripen their grasses in the meadows or allow the hay to stand to be very old, in order to give them some grass seeds without purchase; but we cannot recommend this mode of proceeding, for our meadow grasses ripen at different times. It is therefore folly to attempt

to get seed of only a few sorts, and of those probably not most required, besides injury to the hay crop in quality.

Laying down permanent grass on the chalk hills is likely to receive more attention than formerly, because, as far as we can look back, the plan prevailing has been just the reverse, for thousands of acres of the down land on the chalk have been broken up and brought into cultivation when corn made a good price; but these light soils cannot now be cultivated with profit, such land will therefore return to pasture again. It at once becomes question as to the best way of obtaining a turf upon such soil. We once engaged a farm of 750 acres for an excellent farmer. Some of the best land, however, was in turf or down, so that we engaged with the landlord that the tenant should be allowed to bring the down into cultivation, and lay down the same quantity of outlying hill land. Although the down was good land it scarcely ever bore much grass, the produce being composed of florin and the stemless thistles; however, it proved a capital exchange, for the new pasture proved very productive, as did the new arable. The land to lay down was cultivated, sown with 1 lb. of rape seed per acre, and our chalk down mixture of grass seeds, including Suckling, Yarrow, Perennial Dutch, Timothy, Hard Fescue, Creeping Bent, Foxtail, and Sweet-scented Vernal Grass. Now, this mixture of grasses cost about 80s. per acre. The seeds were sown early in the season, the land proving very fine, and was rolled down. When the rape and young grasses grew up to full head the sheep were folded upon it, with orders not to let them lay back so as to injure the tender grass. After the sheep had gone over the ground, eaten off the rape, weeds, grass, &c., they left a fair quantity of manure, particularly as they eat cake whilst upon this field; but the advantage of the tread of the sheep was very great, made the land so firm that it has been ever since of far more value than before.

WORK ON THE HOME FARM.

Horse Labour.—The frost was well out of the land before the rain came. This was fortunate in various respects. We have in most districts had very heavy storms of rain. This will do much good to the young wheat, which is everywhere very backward and weak in growth; but nothing will benefit it so much as the heavy rains, because it washes down the fine particles of earth liberated by the frost and settles them down firmly round the young plants, and this is always desirable after a long period of frosty weather. In some parts of the kingdom there are still considerable areas originally intended to be sown with wheat which are yet unfinished. On land where roots were fed off by sheep in frosty weather seed can now be sown at every dry interval if it happens to be a dry soil. If for wheat a day should not be lost, and the heavier and wetter the land works the better if the seed can only be buried with a time or two of the iron harrows. Wheat sown in a heavy and difficult season in the spring will always do better than when the land is light, because weeds are sure to prevail in the latter case and the corn more likely to blight in the harvest. The next work for the horses is ploughing for the planting of beans and early peas, and where the home farmer is likely to sell vegetable produce the Early Longpod and Broad Windsor beans may be planted in lines 40 inches apart, and the early Renfield Market cabbage plants between. Nearly all the autumn-planted Cabbage plants have failed. Slugs in most cases seriously gnawed them just before the frost set in, which has killed or greatly injured the main crop of early varieties. Cabbages will pay well this year for growth as an intercrop. Peas, too, some of the dwarf-hauled varieties, will pay well for early picking if planted now at the intervals as with beans, because all kinds of vegetables will be extremely scarce up to a certain period. Great endeavours will be made to send us what we require from other States on the Continent, but it must be remembered that the winter has been of unusual severity in France and the other bordering countries which usually furnish the metropolis with early vegetables. Now the cereals are likely to give a poor acreable result in money every effort should be made by the home farmer to produce those crops which yield the largest returns. Never mind the rotation of crops, only keep the land clean and grow such produce as will yield the most revenue, and there are certain specialities in every district which succeed best. Let the home farmer use his discretion, and look only to growing those crops which will realise most money; at least, as a production beyond the requirements of the stock, &c., of the home farm.

Hand Labour.—This will still be hedging, banking, trenching in the meadows, attending also to the regulation of the supply of water in the irrigated meadows. On the first appearance of a white dry surface on the arable land which requires draining, it will be the best time and opportunity for setting out the work, wherever the wet spots are they will show like black spots in the field; in which case the home farmer will find it comparatively easy to set out the work, particularly after referring to our subject on draining strong soils lately given in these columns. The weaning of calves will now be going on, and, except for the heifers bringing a first calf, they should be taken from the cow directly they fall, or else only suck the mother for a few days. In either case they can now be brought up in a good healthy condition without having

any milk in their food. The compounds for making calf gruel are sold now by various persons, Simpson's being very good; but Bowick & Co.'s is the latest discovered article and the cheapest, and requiring also less time or pains in preparing before giving to the calves. We are decidedly of opinion that these compounds when properly given are safer food than when the farmer undertakes to make up various articles mixed with milk, and will be likely to have a more regular effect upon the young animal's health and frame than when milk forms a part of its food. As long as ever milk forms part of a calf's diet it is hardly ever safe from the scour and other internal complaints.

The shepherds now will find the early Down lambs strong enough to follow the ewes to the turnip fold, and will in consequence be able to learn to eat from the troughs and hayracks. Lambs, however, will always pick fine, soft, flowery, sweet hay before they will eat anything else, and if very fine white Dutch clover has been grown for them they will eat a little at a very early period, particularly if it has a nice aroma. The lambs should have placed for them only the best in very small quantities, and constantly removed back to the ewes whatever may be left. We do not approve cutting into chaff for lambs such hay as they ought to have, and like we have described. The lambs will soon begin to eat a small quantity of roots, but it should be white-hearted cabbage or else White Belgian carrots. Either of these cut by hand before being put into Gardener's turnip cutter, and after being passed through twice the pieces come out like dice, in which state the lambs can easily take such small pieces into their mouths; and as our plan is to mix cake meal and oatmeal with the minced roots the lambs are sure to get an allowance of meal, which we call the superior food, as well as the roots, and the roots are far more likely to agree with them also when mixed with meal. There is no other way that we know of whereby lambs can be induced to eat meal at such an early period, particularly when the troughs are placed under the hurdles with the backs to the wind. The little lambs then go to them for shelter, and then, being attracted by the aroma from the carrots, are induced to commence eating.

CANADIAN AGRICULTURE.—No. 2.

MR. COWAN's report of his visit to the Dominion is very full and excellent. He first directs attention to the "vast extent of territory in the Dominion, containing as it does three million five hundred thousand square miles of land; or, by way of comparison, that it is as large as the whole of Europe, and larger than the United States of America, leaving out Alaska." Traveling at the rate of a thousand miles a week he arrives at Manitoba, and notices the farm of Mr. Mackenzie, who "owns about 18,000 acres of first-class land in various parts of the province and territory. I was certainly surprised at the wonderful fertility of the soil, which is a rich black loam, averaging about 18 inches of surface soil, on friable clay subsoil, 5 and 6 feet in depth, beneath which is a thin layer of sand, lying on a stiff clay. He considers the fertility of his land is practically inexhaustible, as in his opinion the friable clay underneath the surface soil, after a little exposure to the action of the atmosphere, will be as fertile as that above it. With respect to the yield of his crop, he favoured me with his average for the seasons of 1877 and 1878, and his estimate for the present year, these were as follows:—Wheat crop, 1877, averaged 41 bushels; 1878, 36 bushels; this year he expects it to be close on 40 bushels per acre. The variety grown is called Fife wheat, which has a hard, flinty, plump kernel, reddish in colour. The average weight is from 60 to 62 lbs., but has grown it as high as 64 lbs. per bushel. The wheat is sown from 15th of April to 12th of May, oats up to 20th of May, and barley from 24th of May to 8th and 10th of June. Reaping generally takes place in August. The Manitoba wheat is much prized by millers in the United States for its superior quality, and brings the highest price in the market. With regard to labour, he has never had any difficulty hitherto in securing it, and does not anticipate any, at least in the immediate future, as many of the new settlers on first entering the country find it to their advantage in gaining experience to hire themselves out for the first year. Meantime labour can be had for £40 per annum with board, or for the summer season at about £5 per month, and Indian labour at the rate of 2s. per day. Mr. Mackenzie meantime lets a portion of his land on the following terms:—He provides his tenant with one-half of the seed sown, and receives in return one-third of the yield of grain, no rent being charged for the ground used for pasturage or green cropping." Root crops are also grown extensively and profitably. Arriving at Winnipeg, the capital of the province, he describes the farm of a Mr. Gerrie, who "owns about 43,000 acres of land in the province, of which, however, he only farms 4000 acres, lying at a few miles distance from the city. The soil is a good deep loam on a clay subsoil, the land dry and well watered by a creek passing through it. He grows wheat, principally of the Fife variety, and black Tartarian oats; he estimates his yield of the former this season at fully 80 bushels per acre, and had been offered 8s. per bushel delivered at Winnipeg. He also has had no difficulty so far in getting a sufficiency of labour, has paid as high as £48 per annum, with board for a

good man. His expenses of management per acre were as follows:—The first breaking of the land costs 12s., and second ploughing in autumn 8s., and can get it done by contract for the above sums; seed, harrowing, harvesting, thrashing, 20s., which in addition to the first cost of the land, say 20s. per acre, amounts in all to £8 per acre; so that anyone who will take the trouble of calculating the value of the first crop grown on the land as given above will see that for at least the portion of the farm brought under crop the owner of the land has been fully paid both capital and interest for his outlay during the first year. Mr. Gerrie—who is a good specimen of an intelligent, shrewd, canny Scotchman—informed me that he is always prepared to dispose of some of his extensive property, that early this summer he had sold 240 acres not far from his own holding at £1 per acre; and that good land within easy distance at Winnipeg could at present be bought for that sum, whilst low-lying swampy land—capable, however, of drainage—could be bought as low as 8s. per acre." Returning to Ontario a cheese factory is visited. "It belongs to a joint company, and was put up this summer, and consequently has all the latest improvements; it also is situated in a fine grazing country, and very convenient to a railway station. They had about a thousand cheese on hand, all of which had been sold at 12½ cents, or fully 6d. per pound. This—taking into account the expense of freight to England, commissions, &c.—was at that time a long price, and they would require to realise from 65s. to 66s. per cwt. in the English market to leave any profit to the purchaser." In the province of Nova Scotia Mr. Lindsay sold his sheep last spring for 2d. per pound for shipment to the English market. In the neighbourhood of Sherbrooke, on the St. Francis River, "the farms vary in size from 100 to 500 and 600 acres, and could be bought at present from £8 to £5 per acre. At the latter price the land would be in a high state of cultivation, with very good farm buildings; for wild or uncleared land from 2s. 6d. to 12s. 6d. per acre, according to the location. The average yield of crops this season were as under:—22 bushels of wheat, 45 bushels of barley, 50 bushels of oats, 26 bushels of peas, 27½ bushels of potatoes, and from 800 to 1000 bushels of turnips. Wheat was selling at over 6s., barley at 2s. 8d. of 48 lbs. per bushel, and oats of 82 lbs. at 18d. Milk cows were worth from £4 to £6 each, good shipping steers from 2d. to 2½d. per pound live weight, sheep 2d. per pound live weight, and lambs at three to five months old from 9s. to 12s. 6d. per head, butter from 11d. to 1s., and cheese 6d. per pound, pork 8½d. to 9½d., turkeys 5d., and poultry 4d. per pound."

Mr. Cowan concludes his report as follows:—"To those who think of emigrating to Canada I would say that in my opinion the Dominion has the advantage of being nearer England than any of her other colonies; that to whichever of her provinces they may go they will meet with the kindest, most hospitable people on the face of the earth; they are also as loyal subjects as Her Most Gracious Majesty the Queen has in any other part of her vast dominions; they will go to a land of immense mineral as well as agricultural resources yet to be developed, a land that has a great future before it, and which I feel assured will some day become one of the mightiest countries on the face of the earth."

THE "ANY OTHER VARIETY" CLASS.

WE return to the "Variety" class. It seems to us that though poultry shows have done much good in the improvement of some breeds, they have done a certain amount of harm in causing the extinction of others. Fashion and "paying classes" have driven from the show pen rare varieties; and fanciers, more anxious to obtain the distinction of a few prizes than to gratify their eyes and taste, have followed fashion obsequiously. It has long been our endeavour to prevent the utter extinction of pretty but neglected breeds; hence it is always with pleasure that we return to this refuge for the destitute, the "variety" class.

The last breed which we described under this heading were Buff Polish. Still rarer, but not yet quite extinct, are pure white Polish. In the poultry books of thirty years ago we find them mentioned among the sub-varieties of Polish. We remember some about twenty years ago, fine-bodied hardy-looking birds, bearded, and apparently far more robust than the White-crested Blacks. They used to run in the roads of a north country village, and for all we know their descendants may run there still. A famed Polish exhibitor showed them with almost unvarying success till about 1861, when his stock was dispersed, since which time they seem almost to have disappeared. Attempts were made not long ago to recover some of this strain, but we believe entirely without success.

Here and there at English shows we have seen birds entered as White Polish, which were but puny creatures and bore evident traces of relationship to Sultans. In France we understand they are but rare, but by no means quite extinct. At the great show in connection with the Paris Exhibition of 1878 a really fine cock was shown. He was tanned yellow with sun, and deep in the moult, but evidently would in good condition be a noble and beautiful bird. Four hens shown by the same exhibitor made a pretty pen, but were hardly a match for them, some of them

being ticked with black and not very good in beard; still they were really White Polish apparently well bred, which with such a cock might in the hands of a careful breeder have been the nucleus of a good strain. If we are not mistaken they eventually came to England, and some of them appeared at the Crystal Palace Show of 1878, since which time we have not seen them. We hope the breed is not destined to be lost as was the once celebrated black-crested White variety. An enterprising fancier might by much searching obtain stock in France. We have seen birds approaching the desired type both in north and south Italy, though always defective in tuft.

Cuckoo Polish, too, have been and might be again. Cuckoo is however a compound colour in all gallinaceous birds—i.e., we know no Cuckoo breed which does not show signs of having been formed by crossing black and white birds, the progeny being often black and tending to white in the stronger feathers. We do not believe that a real strain of Cuckoo Polish could be produced save with immense trouble and after long time. About eight years ago an English fancier showed a pair and then sold them; since then we have seen no more except a few in France, Houdan like, and so poor in crest as to seem only half Polish mongrels. We fancy that a cross between the silver and white-crested Black varieties might produce some such birds. We often wonder that those who have spare time, and are fond of what the Pigeon fanciers call "naturalistic pastimes," do not employ themselves upon such experiments in crosses for the production both of useful and curious breeds.

The reproduction of the White breed with black crests is, we fear, well nigh hopeless, for there is nothing to begin upon. The last known specimen of it, we believe, was that seen by Mr. Brent, as related in "The Poultry Book," thirty years ago at St. Omer in France. Buffon mentions them as a French breed in his time. The Rev. E. S. Dixon writing in 1850 knew of no trace of them then, though curiously enough he was also ignorant of the existence of a pure white breed, and believed such birds to be only albinos accidentally produced from the Black or Silver races.—C.

ASEELS.

ON looking over old poultry exhibition catalogues and journals for the last ten or fifteen years, we are surprised at the number of new varieties of fowls which have been brought into notice during that period, many of which have succeeded in taking their places permanently in the prize lists of all the principal shows. The list comprises Leghorns, Andalusians, Black Cochins, and their congeners Langshans, Pekin Ducks, Sultans, and others, which seem to have established themselves, in an exhibition point of view, as paying breeds. The last introduction of this kind is the Aseel, a name which may fairly well be rendered into English as "pure bred"—thoroughbred. This bird made its first appearance before the public at the Norwich Show of 1878. Then at Birmingham, Cambridge, Shrewsbury, and Wolverhampton this season there were classes for them again, most of which were tolerably well filled, though the young birds did not show up so well as the old ones. This, I suppose, we must attribute in a very considerable degree to the extremely bad chicken-rearing season last year, which, trying as it was to the acclimatised and native breeds, must have been wonderfully so to birds just come from the climate of India, and which delighted to bask in the full rays of its sun. So, no doubt, the continual rains of last season were very deadly to the young Aseels. Let us hope that the coming season may be better for us all.

A very natural curiosity drew a constant succession of visitors in front of the Aseel classes at Birmingham, discussing their looks, qualities, relationship, and capabilities; and notably one or two old Game breeders near Manchester who have chanced to come into contact with some Aseel cocks delivered a very favourable verdict on their powers of lasting as compared with English Game, though whether this was practical knowledge or theory only was not explained. It was stated that if they were fought unarmed the Aseel would from its muscular strength and tenacity of purpose wear down an English bird, but that with steel spurs on the latter would easily be the conqueror. How this may be it is of course impossible to say. Anyhow they are unquestionably a very striking and handsome breed, and no one can see their bold keen eye, upright carriage, strength of frame and hard feather, without recognising them to be a true type of fighting bird, as indeed they ought to be, since they have been bred for hundreds of years solely for fighting purposes in the native Indian courts, and the purity of each particular strain jealously guarded. This fact, too, of their having been bred solely with a view to fighting explains what seems to puzzle at present the reporters and the public. There is no standard colour among them. They may come of any colour from any particular pair. In India the selection has been for fighting properties entirely with an entire disregard to colour; and white and black and bajree and spangle have all been mixed up together for untold generations.

Their small peacomb is a great point in their favour. It seems to obviate the necessity of dubbing for those fanciers who are

attracted by the beauty of the Game fowl, but who hesitate to keep them on account of that necessity. There is some drawback, however, to the breed. They are at least fully as fierce fighters as the Game or Malays, and no two cocks can come within hail of one another without the battle being fought out to the death; and the same almost must be said of the hens.

Their bold nature, however, makes them so tame that they can be picked up and handled without their being frightened in the least, and of course that tends to their being made special pets. There were very disheartening accounts of their laying power on their first introduction. They were said only to lay about five or six eggs and hatch them, and then cease for the year; but whether it is acclimatisation that has wrought the change or not, certain it is that they lay much better than that now—in fact, we hear of hens beginning to lay often in January, and sitting and laying in succession through the season; in this respect not at all inferior to the Game. The chickens, too, seem tolerably hardy. As to colour, it is a mere question of what each person prefers. On the whole the "bajree," a sort of reddish dun slightly ticked or pencilled, seems the nearest approach to a standard colour for the hen, the cock belonging to it being a lightish or chestnut black red; but the black birds are very stylish indeed.

Now with respect to its capabilities as a flesh-former. No doubt as it runs in the yard before you it looks very small, and you are inclined to say it is little bigger than a Bantam; but take it up, and you will be astonished at the closeness of the feather, and then at the weight of the bird. They are indeed very handsome fowls for the table, their breasts being so round and full of flesh that they do not require their breast bones being beaten in, and their flesh is of remarkably fine texture and flavour.

These birds were originally procured in the neighbourhood of the native Indian courts by some of the English officials who carried the poultry mania with them from home, or who perhaps liked to fill up an odd half hour or so in cock-fighting. The breed evidently had its fascination for them, and when they returned home they brought it with them, and introduced it to their friends; and it has this last two years been taken up very considerably by fanciers.

On the whole it seems almost certain that the breed will win for itself a very considerable amount of support and favour from the public when it becomes more known; and we must welcome it as an undoubtedly striking and handsome breed added to the catalogue of show birds.—X.

VARIETIES.

THE Wirral and Birkenhead Agricultural Society will hold their annual Exhibition on the 9th of September.

—MR. MECHI, in a communication to the *City Press*, says that he estimates the loss of the farmers in 1879 at £100,000,000. Mr. Thomas Scott, upon the other hand, puts it at £150,000,000.

—BIRD-BREEDING IN JAPAN.—Keeping and breeding cage birds as a pastime or for sale has been practised longer in Japan than in any other part of the world. Whilst our forefathers in Europe began to breed cage birds only three hundred years ago, the Japanese living three thousand years ago knew quite as well how to breed birds in cages as we do now. Whether it was originally the Striated or the Sharp-tailed Finch from which the Japanese bred the White Bengalese has not been ascertained, and perhaps never will be determined. That it was one of the two is certain. We see the singular result of a breed of perfectly white or mottled little birds being regularly produced, descended from Brown Striated or Sharp-tailed ancestors—another example how birds through cage-breeding may change their colours in the same way as our old friend the Canary has done. Breeding these little white Finches has certainly been practised for centuries in Japan. When and how the change of colour was brought about is not known, but the birds produced may and should be considered as a distinct variety, for they are as different from their ancestors as the Norwich Canary is from his forefather of the Canary Islands.—(From "*Canaries and Cage-Birds*" for February.)

—REFERRING to the changes requisite for rendering farming more profitable, the *Agricultural Gazette* observes that no time should be lost in discussing the probable future of farming. Agricultural education does, in fact, take a new departure from the year 1879. Forty years ago it meant a knowledge of science and practice. Now it means more. It means a knowledge of the world. It means a disabusing of the mind from prejudice, and a capacity to think of the cultivation of anything that will pay. The garden has become, indeed, our model; the poultry-yard more hopeful than the feeding stall; milk and butter more important than cheese; fruit and vegetables more lucrative than wheat and barley, and it would be well for landlords and farmers seriously to consider if they are doing the best for themselves and their country by devoting the whole of their arable land to the growth of wheat, barley, clover, and roots. Such a routine is simple, and eminently adapted to the management of large, and especially of off-farms. But the man who recognises the importance of keeping pace with the times will soon see that a much larger variety of

crops must be grown; and that those crops must be of such a nature as to defy competition. We have indicated on previous occasions the direction in which profit may still be found. It is in the production of all commodities which are soon perishable, and which owe their goodness in a great measure to freshness. Whatever we can apply the adjective "fresh" to, may still be grown in England at a profit. Thus fresh milk, fresh butter, fresh eggs, and fresh vegetables of all kinds, and, no doubt, for the most part still, fresh meat. The cultivation of many of these products is familiar to us, while others may require special knowledge. Neither are we afraid of the maxim that "when all grow cabbages, cabbages will not pay." There is a sufficient variety to afford remunerative labour to all, and when once the old routine is broken down we shall be astonished to see the many paths that will be taken.

— **THE DAIRY INTEREST IN AMERICA.**—In no interest is the advance of American agriculture more marked in its character than in the productions of the dairy. The dairy products of the land, says a transatlantic contemporary, exceed in value the vananted crops of the Southern cotton; they even stand higher in the scale than the wheat crop itself, representing as they do an annual production of 350 millions of dollars. Immense as this grand total may appear, yet the business of dairying is only in its infancy. We send abroad of cheese and butter, especially of the latter, a far smaller portion than we use at home, and yet when the home demand is fully supplied the excess for export is already such as to produce a great commerce in the near future. Our export for the month of October of butter and cheese was at a rate which would amount to 20 million dollars per annum. Simply as showing the enormous products in this line it may be stated that shipments of cheese from the single market of Utica, N.Y., during the last season, were 18,093,540 lbs., valued at \$1,488,556, and from Little Falls, N.Y., 14,696,580 lbs., worth \$1,149,566. In the whole country during the year 1878, 840,000,000 lbs. of cheese were produced.

— **THE ROYAL AGRICULTURAL SHOW OF 1880.**—Rapid progress is now being made with the work required to be done on the ground at Carlisle, where the Royal Show of 1880 will be held in the second week of July next. Mr. H. J. Little, Coldham Hall, Wisbech; Mr. J. Outhwaite, Catterick; and Mr. Brown, Chippenham, are now visiting the farms entered, the competition being confined to the counties of Cumberland and Westmoreland, and the district comprising the Haltwhistle Union, and taking note of the stock housed. The local subscriptions raised now amount to nearly £5450, of which £8000 has been paid. The estimated expense to the Local Committee is expected to reach above £6000.

— **POTATO DISEASE.**—Commenting on Major Nolan's application for a Select Committee of the House of Commons to inquire into the best means of diminishing the frequency and extent of the failures in the potato crop, the *Irish Farmers' Gazette* observes—With regard to that class of cultivators in whose behalf we suppose Major Nolan acted—that is, the small landholders of the west—it is not difficult to understand the reason why disease and failure should be a common occurrence in their crops. They never change their seed, unless compelled to do so from having consumed their seed potatoes as food. They continue growing the same kind year after year, and frequently in the same ground, and the potatoes kept for seed are those which are too small to be used as food, and, as we have seen, potatoes which were more or less diseased. Then the cultivation of the crop, from first to last, is rude and imperfect. Everything is against the production of a sound and good average crop; and until those small landholders are brought to alter and improve their imperfect system, we fear that the information elicited by a Select Committee, however elaborate and important it may be, will not prove of much use to them.

FOUL BROOD AMONGST BEES.

THE following translation from the "Bienenzeitung" of a discussion at the German Bee-keepers' meeting at Prague in September last has been communicated by Mr. Alfred Neighbour:—

"How do you account for the sudden appearance of foul brood in districts where it was previously unknown? What are the causes of this disease, and how can it be prevented from spreading?"

Mr. Reinert of Starkow.—Gentlemen—To answer this question, which has been placed on the programme at my request, I consider it necessary that I should give you a brief account of a foul brood case. At the meeting in Greifswald last year a so-called breeding apparatus was exhibited in which foul brood was discovered by Pfarrer Rabbow. The apparatus was at once ordered to be closed and to be removed from the Exhibition.

A great many bee-masters, however, did not approve of Pfarrer Rabbow's summary proceeding, their opinion being that it was not a case of real foul brood, but simply of larvae which had died on the journey to Greifswald, and this opinion was shared by Dr. Dzierzon. The exhibitor, a member of the Society, of which I am the Secretary, left Greifswald in disgust and doubt, and on his return home he at once set to work to examine his colonies, the result being that what he had often seen previously but not taken further notice of he now recognised as foul brood, and to his

horror he observed that quite half the number of his stocks were suffering from this disease. But now we come to the worst part of it. The discovery was kept secret, and our friend, whom I will call Mr. W., did not show himself at the meetings of our Association. It being generally thought that Pfarrer Rabbow had made a mistake, the Greifswald incident had been entirely forgotten by us, but not by the exhibitor. Ten or twelve of his colonies, which he considered incurable, were destroyed at once and the remainder he attempted to cure according to Hilbert's method. It seemed to him that he had become master of the disease; nevertheless he was looking forward to the coming spring with considerable anxiety, and when his colonies were examined again they were found to be infected with foul brood. Some of these stocks were destroyed, and others he again tried to cure by the application of salicylic acid, but without taking a single bee-keeper into his confidence. At last, however, he appeared again at one of our meetings, which was held at the house of a forester in my neighbourhood last year. It was proposed there that some artificial swarms should be made, at which operation we all assisted. On opening the first hive we immediately noticed cells containing foul brood, our attention being called to them by Mr. W., but nobody believed it really was foul brood, which was unknown in our district. I believed my bees as free from this disease as I myself was from yellow fever. A few days later the proprietor of the apiary examined his colonies, and found five of them totally diseased. That none of us paid any attention to Mr. W.'s discovery is accounted for by the fact that nobody had the least idea of what had occurred in W.'s apiary. At length, however, a report got abroad amongst the bee-keepers in my neighbourhood that there was something wrong in Mr. W.'s apiary. A general examination of the hives in the district followed, and the result was that foul brood was found to exist in ten communities which were situated near one another. The matter was now taken in hand by the Bee-keepers' Association, who called a meeting, which all bee-masters within a circle of ten miles were invited to attend. Mr. W. was present at this meeting and related his troubles, adding that this disease had doubtless existed in his village for several years, for in places where bee-keeping was formerly in a flourishing state, and apiaries with thirty to fifty prosperous parent hives were to be met with, things had lately been quite the reverse; the colonies in the district had died off gradually and none but his own had survived, which circumstance had even brought his name into bad repute. These statements of Mr. W. were confirmed by other inhabitants of the place, and similar accounts were given by other bee-keepers from different parts of the country. Further inquiries showed that foul brood had broken out during the present year in thirteen scattered Pomeranian communities beyond the circuit of our Association.

And now I shall have no difficulty in answering the question: "How do you explain the sudden appearance of foul brood in districts where it was formerly unknown?" In the first place I may mention that many bee-keepers still hold erroneous opinions as to where foul brood first originated. It is generally thought that its origin must be looked for in the south, but our experience of the past summer is opposed to this view. Foul brood is also endemic with us in the north, and the area of this disease is far more extensive than is generally supposed. In apiaries where it breaks out the morbid matter is usually produced quite independently if the conditions are favourable to the development of the disease, as in the present year, when at the busiest time of breeding the weather became cold and rainy, and continued so for five to six weeks, during which period the disease made such rapid progress that it was almost impossible to stand the small which issued from the infected hives. Cold and rainy weather therefore is favourable to the development of foul brood, more especially so when the supply of food to the brood during this time is deficient. When these conditions exist foul brood takes the course of a contagious disease, but in the absence of favourable conditions it may very well happen that there are spots of foul brood in some hives without even an experienced bee-master being aware of it. It seems to me that foul brood, not only in its various forms but also at the commencement and progress of the disease, has a great similarity to diphtheria, which in these days demands so many victims.

Secondly, the outbreak of foul brood is explainable by the fact that the disease is still unknown to a great many bee-keepers. In districts where bee-keeping on rational principles is still in its infancy people look at the bright side of things only, and are apt to lose sight of the drawbacks of the new system. Some bee-keepers indeed speak of foul brood occasionally and describe it as the most terrible disease, but they take good care not to show a diseased colony. Those who have foul brood in their apiaries keep it quiet, and they are not allowed to show their colonies at public exhibitions. I said that Pfarrer Rabbow's proceedings were much blamed, and I now think he was wrong in ordering the bees to be removed, not because there was no foul brood in the stock, but because it was a case of real foul brood.

I think the exclusion from public exhibitions by local associations from the annual meeting of German and Austrian bee-keepers of objects infected with foul brood is not justified. Such

objects if exhibited in a glass case would render a much greater service to bee-keepers than the many observations and notes scattered at our exhibitions.

I now come to the second part of my question: "What are the possible causes of this disease?" I trust you will not expect me to give you a scientific account of *Bacteria*, *Micrococci*, *Moulds*, and *Fungi*, or of whatever name these things may be known. I understand very little about these things. I shall simply place to you what I have observed in my own apiary this spring, and ask you to give me your opinion on the matter.

It is an artificial swarm of last year which I thought to be without a queen when I examined it for the first time this spring. I found two combs which contained brood, the cells were in regular succession, but they contained crumpled brood and they seemed brood side by side. I cut away the tops of these cells and deposited the contents in one jar. A week later I examined these cells again and found them still full, but the contents were now those of a yellowish brown colour and a lowering appearance. A drone which I noticed was treated in a similar manner and with the same result. The bees had not consumed these cells and the dead drone is the only one that has been seen or heard of. This seemed strange to me at the time but the matter did not trouble me then and would more probably have been entirely forgotten had not these two combs proved a fully infected with brood when later in the season I examined the same combs in my apiary. The two cases referred to are worthy of notice. I do not venture upon an explanation, but simply state the question: "Is it possible that brood could originate in an apiary in this manner?" If it is possible, then it would not be my words to be difficult to find a cause for the appearance of brood in other practices in common use, especially where bees are kept in small lots.

I will now proceed to the third part of my question: "How is the progress of this disease to be checked?"

First of all it is very important that every bee-keeper should make himself thoroughly acquainted with the disease; he should study the signs and examine brood in its various stages, and if possible visit the disease at its commencement. I confidently believe that Huxley's recipe is a most useful one in curing brood in the beginning, and I might even go so far as to say it is an infallible remedy. In the first place, therefore, we should make ourselves thoroughly acquainted with brood; secondly, it is necessary that bee-keepers in warm apiaries brood has unfortunately made its appearance would be honest enough to make it known. A bee-keeper who frankly confesses that he has brood in his apiary renders a very great service to others as well as to himself. His neighbours will then know from what quarter danger is threatening them and be able to take measures accordingly, while the unfortunate bee-keeper will not be waiting in good friends and neighbours ready to advise and help him to bear his misfortune. "Unity is the most powerful ally of this disease," said Plummer Babbalanja to me when I informed him of our troubles, and our experience has proved his words to be true. While our fellow bee-keepers have lost the majority of their colonies we have saved ours to this date, and I trust that we shall get them safely through the winter. In case a bee-keeper whose colonies are attacked by this disease should belong to a bee-keepers' association he should apply to the secretary, who will always be glad to give him a helping hand, and where possible and necessary will employ every means at the command of the society to lessen the misfortune, for by united action we are able to overcome the greatest difficulties according to the old saying, "Unity is strength." [Bravo.]

(To be continued.)

HOW TO MAKE SYRUP FOR FEEDING BEES.

I HAVE taken some pains to find out the cause of the frequent failures in making syrup for bees from crystallisation and turning sour. The bee books give the quantities of sugar, water, vinegar, and salicylic acid, but they do not say how and when they are to be mixed, and do not go into the detail of making sufficiently to enable a novice to insure success. The following is the method I have adopted, and which will be found to answer admirably.

Take 10 lbs. of best refined loaf sugar; place it in an enamelled preserving pan, and cover the same with five pints of cold water, filtered rain water is best. The sugar should not be broken smaller than is absolutely necessary, as the breaking and bruising is one of the causes of the syrup being cloudy. By the use of the best sugar it will be less liable to spontaneous decomposition, and will keep perfectly clear and transparent.

The pan or saucepan should be covered over until the sugar is dissolved, which will take some hours. I usually leave it all night, and the first thing in the morning I stir it before heating. Care must be taken to employ as little heat as possible, as a solution of sugar, even when kept at the temperature of boiling water for any length of time, undergoes slow decomposition. This is best done in a water bath by placing the vessel containing the sugar and water in another containing water; or if put on a

stove or hot plate the fire should not be too fierce. As soon as the water boils add an ounce of vinegar after which allow it to boil gently for four or five minutes. The syrup should now be put into an earthenware vessel in which there is a temperature not higher than 70° Fahr. and that an ounce of salicylic acid is added; if this is added at a higher temperature there will be loss by evaporation.

If the acid solution is put into the syrup during the time it is in a weak vessel, it renders the syrup staler.

It should now, while hot, be put into bottles and sealed tight. Small glass pickle bottles are suitable for this purpose when once the bottle is opened at the top it should be all used, and the bottling and sealing must be avoided.

The present salicylic solution may be increased if just before bottling an equivalent of 1 oz. of soda salt is added. It will be used as a stimulant, and may be used in three parts of alcohol. The present solution will be found stronger and much more convenient for use.

In Mr. Cowan's receipt he uses several pieces of honey, but this will not be necessary if the present salicylic solution is used.

The syrup should be kept in a sterilised temperature not exceeding 60° Fahr.—JAMES M. H. COOK, *Horticultural, Somerset, Kent.*

OUR LETTER BOX.

FATTENING CUCKOOS. (C. E.).—We cannot recommend any specialist of fattening them, as you cannot separate them from the other flock.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 5" W.; Altitude 77 feet.

DATE.	9 A.M.				IN THE DAY.				WIND.
	Barom.	Therm. at level of surface.	Hygrom.	Direction of Wind.	State of Sky.	Therm. at level of surface.	Therm. at level of surface.	Therm. at level of surface.	
Feb.	Barom.	Dry.	Wet.	Direction of Wind.	State of Sky.	Max.	Min.	Mean.	WIND.
5th.	30.45	32.5	32.5	W.S.W.	2.5	41.5	32.5	37.0	1.5
6th.	30.45	32.5	32.5	S.W.	2.5	41.5	32.5	37.0	1.5
7th.	30.45	32.5	32.5	S.W.	2.5	41.5	32.5	37.0	1.5
8th.	30.45	32.5	32.5	S.W.	2.5	41.5	32.5	37.0	1.5
9th.	30.45	32.5	32.5	S.W.	2.5	41.5	32.5	37.0	1.5
10th.	30.45	32.5	32.5	S.W.	2.5	41.5	32.5	37.0	1.5
11th.	30.45	32.5	32.5	S.W.	2.5	41.5	32.5	37.0	1.5
12th.	30.45	32.5	32.5	S.W.	2.5	41.5	32.5	37.0	1.5
13th.	30.45	32.5	32.5	S.W.	2.5	41.5	32.5	37.0	1.5
14th.	30.45	32.5	32.5	S.W.	2.5	41.5	32.5	37.0	1.5
15th.	30.45	32.5	32.5	S.W.	2.5	41.5	32.5	37.0	1.5
Mean.	30.45	32.5	32.5	S.W.	2.5	41.5	32.5	37.0	1.5

REMARKS.

- 5th.—Fair morning with bright sun at intervals, slight showers in afternoon with hail at 5 P.M.; clear starlight evening.
 6th.—Showery morning with glimpses of sunshine at intervals; afternoon overcast with rain; high wind and rain in evening.
 7th.—Fine morning, slight fog from noon to 5 P.M.; fine afterwards.
 8th.—Fair day, but not much sun; fine clear evening.
 9th.—Dull rainy morning, followed by a very fine spring-like day; light warm sunshine; starlight evening.
 10th.—Fine bright day, but rather cooler.
 11th.—Dull and overcast, with slight rain constantly after 10 A.M.
 12th.—Very much milder, and with more rain than during the whole of January.
 —G. J. SYMONS.

COVENT GARDEN MARKET.—FEBRUARY 18.

BEST goods are now getting short and are in demand, more particularly good samples of Grapes. The vegetable market is still badly supplied and prices are high. Trade somewhat better.

FRUIT.

Apples	dozen	100	Nectarines	dozen	100
Apricots	dozen	100	Oranges	dozen	100
Cherries	box	0	Peaches	dozen	0
Chestnuts	bushel	12	Pears, kitchen	dozen	0
Figs	dozen	0	dessert	dozen	0
Filberts	dozen	0	Pine Apples	dozen	0
Cobs	dozen	0	Pistons	dozen	0
Gooseberries	dozen	0	Raspberries	dozen	0
Grapes, household	dozen	0	Walnuts	bushel	0
Lemons	dozen	0	ditto	dozen	0
Melons	each	0			

VEGETABLES.

	sd.	d.	d.		sd.	d.	d.
Artichokes.....	dozen	2	to 4	Mushrooms.....	pottle	1	sto 1 1/2
Asparagus.....	bundle	10	15	Mustard & Cress.....	punnet	1	2
Beans, Kidney.....	100	2	3	Onions.....	bushel	3	5
Beet, Red.....	dozen	1	2	pickling.....	quart	0	0
Broccoli.....	bundle	0	1	Parsley..... dos.	bunches	0	5
Brussels Sprouts.....	sieve	0	3	Parsnips.....	dozen	0	0
Cabbage.....	dozen	1	6	Peas.....	quart	0	4
Carrots.....	bunch	4	0	Potatoes.....	bushel	3	8
Capiscums.....	100	1	6	Kidney.....	bushel	4	0
Cauliflowers.....	dozen	2	4	Radishes..... dos.	bunches	0	0
Celery.....	bundle	1	0	Rhubarb.....	bundle	0	0
Coleworts..... dos.	bunches	2	4	Salsify.....	bundle	1	0
Cucumbers.....	each	1	2	Scorzonera.....	bundle	1	0
Endive.....	dozen	1	2	Seakale.....	basket	2	0
Fennel.....	bunch	0	0	Shallots.....	1 lb	0	0
Garlic.....	1 lb.	0	0	Spinach.....	bushel	3	0
Herbs.....	bunch	0	0	Turnips.....	bunch	0	0
Leeks.....	bunch	0	0	Vegetable Marrows.....	each	0	0

WEEKLY CALENDAR.

Day of Month	Day of Week	FEB. 26—MARCH 2, 1880.	Average Temperature near London.			Sun Rises.		Sun Sets.		Moon Rises.		Moon Sets.		Moon's Age.		Clock before Sun.	Day of Year.
			Day.	Night.	Mean.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	Days.	m. s.		
26	TH	Royal Society at 8.30 P.M.	47.3	33.6	40.4	6 55	5 23	6 37	6 35	6 57	6 55	7 9	7 9	17	13 11		57
27	F	Quekett Microscopical Club at 8 P.M.	47.7	35.5	40.6	6 53	5 23	7 56	6 51	7 17	7 15	7 21	7 21	18	13 0		58
28	S	Royal Botanic Society at 8.45 P.M.	49.1	39.3	40.9	6 50	5 25	9 18	7 9	7 19	7 19	7 29	7 29	19	12 49		59
29	SUN	END SUNDAY IN LENT.	47.4	33.6	40.5	6 48	5 27	10 41	7 29	7 29	7 29	7 39	7 39	20	12 38		60
1	M		48.7	34.7	41.7	6 46	5 29	0 5	7 52	7 52	7 52	8 2	8 2	21	12 26		61
2	TU		49.9	32.3	41.0	6 44	5 40	1 25	8 23	8 23	8 23	8 33	8 33	22	12 13		62
3	W	Society of Arts at 8 P.M.	49.7	31.5	40.6	6 43	5 42	2 38	8 4	8 4	8 4	8 14	8 14	23	12 0		63

From observations taken near London during forty-three years, the average day temperature of the week is 48.6°; and its night temperature 33.1°.

POTATO CULTURE.

ALTHOUGH this subject has been often and ably treated, it is of such importance to all classes of the community that no apology for returning to it is needed. That the crop is of inestimable value all must admit the more readily, seeing that we are still suffering from a very general and almost complete failure. This being so, it is not a little strange that comparatively speaking so little pains are taken in the cultivation of the Potato by many growers. The contrast between the method of culture adopted by market growers and that practised by the majority of private cultivators is very greatly in favour of the former. However, gardeners are not always to blame for the lightness of their crops as compared with those obtained by market growers, simply because they are not always allowed sufficient of either solid or artificial manures, both of which are freely used by the latter; in fact, they spare no expense, but the former have to do the best they can with what they can collect, and often meet with little encouragement when they wish to purchase fresh seed.

As will be gathered from these preliminary observations, I am an advocate of high culture as opposed to that too often practised either from necessity or choice. What I term high culture I will endeavour to briefly detail, including in my remarks a few notes on the practice of growers for market, from whom I must confess having learnt much.

The aim of the cultivator should be not only to grow as heavy crops as possible, but also to produce the tubers of good quality. The nature of the soil as well as the treatment given materially affects the crop in both respects, and a suitable selection of varieties is of great importance. No esculent is more easily grown in a great variety of soils than is the Potato, but according to my experience a deep friable loam is the most suitable; not soil that previously has been heavily manured and perhaps lightly cropped, but good fresh loam, of which a fresh enclosed piece of meadow land is a good type. This fresh soil will yield good crops for one or two seasons without manure, but after receiving a good dressing of manure the crops, if well managed in other respects, would be enormous. Such soils in a favourable season are by good management made to produce from 12 to 15 tons of Potatoes per acre. Of course, private growers seldom have the advantages of a virgin soil, but heavy crops may be obtained from some old-established gardens. A soil very full of manure is quite unsuitable for Potato growing, and to obviate this difficulty it is very advisable to dress it over with hot lime and to bastard trench. It may be advisable to explain for the benefit of those for whom these remarks are intended, that bastard trenching is breaking up the land two spits deep without bringing the bottom spit to the surface, it being in most instances much too poor and unworkable. The top spit of the wide trench is wheeled to the finishing point, the bottom spit is broken up, and on to this the next top spit is thrown, the shovellings of the latter being good fresh soil that oftentimes has not

been touched by the spade for years. Any manure that may be used, it is advisable to work in between the spits and not out of the reach of the roots.

Our newly trenched ground is always given up to the Potato crop, to the advantage, I believe, of that and succeeding crops whatever they may be. Previously to taking charge of this garden I was informed that the Potatoes grown were unfit for the table, but bastard trenching and a free use of hot lime has gradually had the effect of bringing the soil into a less rich, and therefore more suitable state, both for Potatoes and all other crops. Where it is impossible to trench, the ground should be deeply dug, and if too rich may be brought into good condition by a dressing of hot lime only, and then taking off it a good crop of Brussels Sprouts, Broccoli, or Cabbages. To be brief, a heavy crop of Potatoes of good quality can best be obtained from a comparatively poor soil heavily manured at or about the planting time.

Of manures I prefer that obtained from the farmyard, to which artificial or concentrated manures, notably guano, are very valuable adjuncts. The latter supplies much ammonia, of which the manure frequently used by gardeners is nearly destitute. The defect in most artificial manures is the absence of humus; hence in dry seasons, unless used in conjunction with solid manures, they are of but little value. The heaviest crop of Potatoes I have ever seen was lifted from land manured at the rate of twenty-five loads of manure, and about 4 cwt. of guano to the acre. Both kinds of manure were thrown into the furrows, and the sets placed directly on it and covered over with the plough. Pure guano is the favourite concentrated manure in this district, but soot is often substituted, using greater proportions, and is undoubtedly a very valuable and cheap fertiliser. Where, however, artificial manure alone will be used I should recommend some of those compounds as advertised, simply because they comprise in themselves a greater number of fertilising elements than do any one specified kind. The exact quantities to be used can be easily ascertained from the pamphlets issued by the manufacturers of the fertilisers.

The condition of the seed Potatoes or "sets" materially affects the weight of the crop, and for this reason deserves great attention. Observant market growers attach much importance to a change of seed, and the results produced are very conclusive evidence in support of their theory. So convinced are they of the necessity of having sets from off soil essentially different from their own, that they will not buy in the neighbourhood even at a cheaper rate than elsewhere. Potatoes from Scotland are eagerly purchased, but those imported from the continent they will not plant on any consideration, the only exception being French Shaws. These they prefer to the same variety grown in England, the crops obtained from the former being much superior to those from the latter. Seed Potatoes should never be allowed to sprout in heaps, or they will be much weakened thereby. Choose moderately strong sets sufficiently started to enable the operator to rub out all side shoots, the centre and strongest one only being retained. This is very important with kidney Potatoes, the centre shoot being so much

stronger than the side shoots. Cutting the ends off these will facilitate their decomposition, or otherwise they are apt to turn out whole. I do not attach much importance to the selection of handsome tubers, but one of our best growers buys up all the prize Potatoes he can for seed. In all probability the same results would follow if equally strong sets were obtained from other soils. If rounds or those kidneys of the Snowflake type are scarce, by all means cut them into two or more sets according to their size, but the best results generally follow those planted whole, provided the central shoot only is allowed to grow. Potatoes that are very valuable and scarce may be propagated from cuttings as advised on page 105, or they may be cut into as many sets as there are eyes, dipped in either slacked lime or sand, bedded in leaf or vegetable soil, and placed under glass till they have started and emitted roots. Water sparingly at the commencement, and transfer to the trenches before the roots have spread far.

The time of planting must depend entirely upon local circumstances. The soil cannot work too well, as the lighter the soil in contact with the tubers the better the quality of the crop, consequently the time of planting must be regulated by the state of the soil as well as the kind of weather experienced. We usually commence planting the early varieties on a south border early in March, but find it very necessary to keep the stems [in the young state well covered with soil, and afterwards protecting with branches of evergreens or fern. During April we plant more early and second early varieties, also the main crop if the ground is vacant and the weather permits. We place the rows of Ashleafs and others of moderate growth 2 feet apart, and the sets 10 inches apart. The rows of strong-growing varieties are placed 3 feet apart, and the sets 1 foot apart in the rows. The Scotch Champions and Magnum Bonums on strong soils require still greater distances, 4 feet between the rows and 15 inches between the sets not being too much. The sets are dibbled in by many, but I think it a wrong practice, especially if the soil is heavy. As before stated, the soil about the sets should be well broken up, the better to enable the "runners" or Potato-producing roots to extend freely; but when a dibber is used, unless the soil be light and open the reverse is the case. Another expeditious method is that of digging-in the sets, for by this practice the soil about them is well broken up, and the ground is not trampled on after planting. The sets are placed in the drills formed during the process of digging, and covered over with the next spit. Lines are used, and the rows placed the usual distances apart. I prefer planting in drills, whether on trenched or newly dug ground. These are drawn with a heavy hoe, and vary in depth according to the composition of the soil; if light and open they are 6 inches deep, if at all close much more shallow. Previous to planting the ground is stirred to a good depth with a fork, giving a dressing of soot at the same time. When the sprouted sets are planted they are first covered with soil by the hand, and then covered over, forming slight ridges, between which we dig or loosen with a fork. When pushing through the ground they are again covered over, and again forked between, both operations being finally repeated when the growth is about 9 inches high.

The selection of varieties must depend upon the nature of the soil. New varieties should be tried, if only to be discarded, for it is a mistake to grow a great collection, however interesting it may be. The American varieties—such as the Early Rose, Alpha, Snowflake, and Breadfruit—are particularly good for light sand, but are comparatively worthless on heavy soils. Of the Ashleaf type Veitch's Improved and Mona's Pride, especially the latter, do well with me; and of early rounds a good variety of Dons and French Shaws are the most profitable. The latter especially ought to be more grown in private gardens. On light soils Porter's Excelsior crops very heavily and is of good quality, and the Early Coldstream is also good. Of second earlys I like Snowflake and Woodstock Kidney. Bector of Woodstock, although small, is a heavy cropping round variety of excellent quality. For the main crop I recommend Schoolmaster, Victoria, Regents, and Scotch Champions—rounds; and of kidneys Prince Arthur, Covent Garden Perfection, and Magnum Bonum. I do not recommend anyone to plant either the latter or Scotch Champion too largely; but a breadth of one or both should be planted as a measure of precaution. It will, however, be a mistake to rely too exclusively on them, as should a dry season ensue short crops will be the result, for the simple reason that they are very gross feeders, and unless they receive very liberal treatment in the way of deep cultivation and abundance of

rain and manure, will fail; at least, such is my experience with them. Disease-resisting they undoubtedly are in a marked degree.

This brings me to that part of the subject which I cannot consistently ignore, much as I may wish to—viz., the Potato disease. This has baffled all attempts made by scientific men to either prevent or cure it, as far as nostrums are concerned. The question is, Is the *Peronospora* the cause or the effect of the murrain? Scientific men incline to the former theory, but, however presumptuous it may appear, I very much doubt the correctness of it. The Potato is a native of a much warmer climate than ours, and, with the notable exceptions above alluded to, the varieties are too weakly constituted to resist the weather vicissitudes of this country. Place a pot plant, a native of Peru for instance, in a low temperature, persistently overwater it, and what will be the result? The roots fail, then the foliage changes, and lastly the fruit or tubers, should there be either. So with the Potato. First the feeding roots more or less fail, then the foliage follows, and this in its turn affects the tubers, which during decomposition are taken possession of by the fungus. This may appear a wild theory, so are many others, and mine, like them, are open to contradiction.—W. LEGGOLDEN.

ROCKERIES.

"Few persons experience the pleasure of growing alpine. We do not understand how to manage them, and therefore fail of success. We really want A B C teaching. If a person would only fancy himself engaged in making and planting a rockery, and describe each step without assuming any knowledge on the part of the scholar, and tell us what to plant, he would teach us to love and grow them. Will you do it?" So writes a friend to me. And although there are many who could do it much better than I can hope to do, yet as the appeal has been made to me I will endeavour to fulfil it to the best of my ability.

There are rockeries and rockeries. There is the magnificent rock garden of Messrs. Backhouse of York, the most perfect example of an artificial rock garden I have ever seen, and there is the beautiful garden of my friend Mr. Hammond of St. Albans Court. There is the rock garden of Mr. Ewbank at Ryde, and there is simply the long narrow border which is called a rockery in my own garden. I think, therefore, in giving any directions for making and stocking a rockery it will be better first to lay down a few general principles which are equally applicable to all rock gardens large or small, and perhaps some negative principles may be as useful as any.

1. I would say, Do not attempt too much. If in all gardening it is wise to cut your coat according to your cloth, it is particularly so in making a rockery. Nothing is more disastrous than to see a great pretentious-looking piece of stone erected "regardless of expense," on which plants have been placed without any regard to their natural conditions of growth, and as a consequence they are miserable failures. To a beginner like my friend I would say, then, Commence with a small rockery; it is easy to enlarge.

2. Do not, if you can help it, employ artificial rocks. In saying this I do not mean to say that plants will not succeed in such formations; and no one who has seen the capital imitations of rockwork in the Bois de Boulogne, and indeed in Battersea Park, can doubt that very natural-looking rocks can be made of bricks and cement; but at the same time there are in most neighbourhoods stones which may be employed in making rockwork, and I have a prejudice in favour of real instead of sham things. Limestone, Kentish rag, sandstone, and freestone are all suitable, the least perhaps of all being that which so abounds in my own neighbourhood—flint. Mr. Backhouse brought his large rocks a distance of twenty miles; a friend in this county got his forty miles off; and if none can be procured near at hand it may be a question whether the expense might be less to have artificial. On no other ground would I employ it.

3. Do not make your rockwork in a shady part of your garden; and yet how often is this done! Persons recollect seeing some lovely nook in a shady dale, where the rocks have been overgrown with creeping plants and foliage and Ferns, and they think that is the sort of thing they are to imitate. But these are not alpine plants, nor is it the kind of habitat they rejoice in. If one would only recollect how they have seen these alpine gems grow—if anyone has ever climbed to "le jardin" at Chamonix, or seen the spider-web *Samolus*

vivum clinging to the face of the rock over the "mauvais pas," or the stemless *Silene* and the Alpine *Gentian* on the top of the Col de Balme, they will then see better what they have to imitate; not to get shade, but to have a fully exposed position where, indeed, you can make shade if you require it with the rocks themselves, but where at any rate the general condition is that of plenty of sunlight and clear air. And then as to plants I would say—

4. Do not begin your growing of alpine plants with miffy or difficult ones. It does so happen that some of our most lovely alpine plants are very difficult. Some of the *Androsace*, *Erithrichium nanum*, *Gentiana verna* and *bavaria*, are all extremely difficult, and to attempt their growth would probably only end in disappointment; and there are a number of beautiful things nearly approaching them in loveliness which are more easily grown, and which will well repay the trouble bestowed on them. In the same way I would say, Do not attempt anything about whose hardness there is doubt; a "probably" hardy plant is a thing to be avoided by a beginner.

In preparing, then, to make your rockery it will be well to secure in the first place a quantity of good friable loam, not too light and certainly not clayey. It is true that there are some alpine plants which require peat, and others garden mould or leaf mould; but all these can be provided for afterwards, but the main reliance is to be placed on a good loam. In making your rockwork do not think it sufficient to throw down some stones on the surface of the soil—the making of it should be a work. See first of all that your drainage is good—a soddened soil is fatal to alpine plants. If necessary, then, drain the place well, and put down a quantity of the loam such as I have spoken of. Then commence at the edge or margin of the bed, place some small rough stones, which will raise it about 9 or 10 inches above the level, add then more soil; then place larger stones until you get the elevation of perhaps 3 feet, and in placing the stones provide for fissures, into which some of the alpine plants which are very long-rooted may thrust themselves, and also what some call pockets, with various aspects—a space, that is, between stones of about a foot square—in which various plants may be placed and suitable soil provided for them. By fissures I mean (although it is difficult to explain it without a sketch) stones placed near to one another and the interstices filled in with soil, the plant to be placed so that it may be enabled to push its roots between the pieces of stone, sometimes in a perpendicular but more frequently in a horizontal position. Then there may be slight elevations in some parts, making a place for some plants which like to be somewhat higher up. When all is finished it should have the appearance of an elevated piece of land with pieces of rock peeping out here and there in various places. The more natural this is the better, but it must be remembered that only at great expense and with considerable time devoted to it can a really natural-looking rockwork be obtained; but in any one however small cockneyism may be avoided. I have in my mind's eye a large piece of rockwork where there is a sort of heaping "*Pelion on Ossa*," where a mound is raised about 15 feet high with large pointed stones jutting out one above the other, hardly any soil to be seen, a few miserable Ferns dragging out a wretched existence, while the owner wondered why his rockery did not succeed. If I have made my ideas at all plain I think such mistakes may easily be avoided. I shall in my next notes indicate the kinds of plants to be used in such a rockery as I have described.—D., Deal.

ROSES AFTER THE FROSTS.

NEVER, certainly, have I more doubtfully made the round of the Roses than during the past two or three days of warm sunshine and still soft air, which we in mid-Lincoln have enjoyed after our full share of snow, frost, and severity of weather during December, 1879, and January, 1880. Miserable have been the accounts from most nurseries and private gardens in the neighbourhood, and it is feared the losses in Rose trees must be serious and extensive—losses that cannot as yet be accurately estimated, nurserymen having been unable to execute orders for Rose trees owing to the early frosts preventing lifting, and then the trees having to a large extent been utterly destroyed.

To speak more particularly of the Roses I cultivate in this little corner, they look far better than I could have thought possible. Standards in an exposed situation have suffered more or less, and amongst the losses are *Cécile Forestier*, *Madame Marie Finger*, *Madame Victor Verdier*, and one or

two others. *Bessie Johnson*, *Senateur Vaisse*, *Madame Charles Crapelet*, and *Coup d'Hébé* look unscathed. Not so *Madame Clemence Joigneux*, *Capitaine Christy*, *La France*, and *Perle Blanche*; and even such brave Roses as *Black Prince* and *Prince Camille de Rohan*, some of them for the first time show traces of the terrible ordeal they had to pass through. All these are established standards. Amongst old standards in a less exposed situation most look very well, one or two only middling, and one—*Abbé Bramet*, has died, besides a *Maréchal Niel* and *Climbing Devonensis*. The two last planted in the autumn.

Now as to the standards of all sorts planted October 25th, 1879, together with a number of dwarfs, and immediately protected with a very liberal mulching of fresh stable manure. Almost without exception the trees look well and strong, and amongst Hybrid Perpetuals I do not notice a single death. The standards include *Dupuy Jamain*, *Abel Carrière*, *Mabel Morrison* (looking delicate, however), *Madame La Baronne de Rothschild*, *Comtesse de Paris*, *Marguerite de Brasseac*, *Belle Lyonnaise*, *Duc de Montpensier*, *Lord Beaconsfield*, *Royal Standard*, *Louis Van Houtte*, &c. Amongst the dwarfs are *Madame Emma All*, *Marie Louise Pernet*, *Horace Vernet*, *Madame Lacharme*, *Princess Beatrice*, *Marie Baumann*, *Marie Finger*, *Capitaine Christy*, and others. As to the established dwarfs I may say I am hopeful generally; and some, notably *Duke of Connaught*, *Sir Garnet Wolseley*, and *Jean Liabaud*, seem exceptionally robust. Amongst the Tea Roses some seem cut to the roots, and time will show whether any life is left. *Rêve d'Or*, *Madame Falcot*, and *Ophiré* are safe. But the last enemy, the east wind, has still to be met and if possible baffled; it is more subtle, treacherous, and persistent than frost, which is an open enemy. I am now screening off all tender Teas and dwarfs with temporary shelter of fern cuttings, but I shall keep those branch screens up until June.—A. M. B.

THE APPLICATION OF MANURE.

NOTHING in gardening can be more simple than the application of manure to the soil, and yet it is one of those important matters upon which depends the success or failure of our crops. Its very simplicity has led many, especially old practitioners, to take much for granted, and in directions given for its use the ignorance of beginners concerning the reason why they are sometimes told to mix it well with the soil, and sometimes to apply it as a surface dressing, has been forgotten. My attention was drawn to this subject by the letter of a young correspondent who had just made a new Vine border, and instead of mixing any manure with it he had spread it upon the surface to a depth of about 9 inches.

Now our young correspondent had probably been told that it was customary for good Grape-growers to apply an annual surface dressing of manure to their Vine borders, but he had not been told that this was not done until the roots had spread about in the border, and in some degree exhausted its fertility. To apply a heavy surface dressing before this has taken place is a positive source of evil, tending as it undoubtedly would to render the soil sodden and sour. For Vines, and in point of fact all fruit trees, Strawberry beds, Asparagus, and all other vegetable beds that are permanent, we should first of all secure thorough drainage and a free passage of water through the soil by drain pipes and a liberal admixture of hard gritty matter, and then mix enough rich manure with it to ensure its fertility for two or three years, subsequently applying surface dressings, which invariably induce an abundant formation of rootlets near the surface and thus tend to promote a free strong growth, great fertility, and also to keep the spongioses from contact with a cold inert subsoil.

I have used the term rich manure, meaning thereby manure that is well decomposed when applied to the soil, for it is undoubtedly bad practice to use it in a crude condition, and yet doing so has often been recommended because it tended to keep the soil open for a time. Better far to keep the soil permanently open by such a substance as coal ashes, and apply the manure in a state that will be immediately beneficial to the roots.—EDWARD LUCKEYRST.

CONSERVATORY ARRANGEMENT.—I find *Scilla siberica* does best in 5-inch pots. In one side of the conservatory here the front row is formed of pots of the above and of *Isoplepis gracilis* alternately; behind these are two rows of fine plants of white Chinese Primulas, dotted with *Polyanthus Narcissus* and *Dra-*

cæna indivisa. The back row is composed of *Azalea narcisiflora* and *Erica hyemalis*. The effect is most chaste and pleasing. The other side has *Cyclamens* instead of *Scillas* between the Grasses, then a row of Crocuses, next a row of red *Primulas* dotted with plants of *Acacia lophantha* 18 inches in height. The back row is *Epacris* and tall pyramidal plants of *Cytisus racemosus*. The effect on this side is rich. I am not at all responsible for these two arrangements, the young man in charge having done so of himself. It is altogether so simple and efficient as to be worthy of note.—R. P. BROTHERSTON.

THE FERTILISATION OF FERNS.

A SUBJECT of peculiar interest—viz., the reproduction of Ferns, is discussed by Mr. Eadon on pages 83 and 117 of the present volume. He expresses an opinion that there is no sexual fertilisation in Ferns. In support of this assertion he adduces his own and others' experiences in raising Ferns from spores, and endeavours to prove the falsity of the "theories" that have been advanced to account for the phenomenon. Such an opinion as this would not have been remarkable thirty or forty years ago, but at the present time it is a little astonishing, for the "theories" are now facts that anyone, with the aid of a good microscope and possessing the patience to investigate the matter, could easily prove. Mr. Eadon does not state whether he has employed a microscope in his researches, but I presume he did not, or his opinions would have been speedily changed; therefore the following remarks may be interesting to him and others who for want of time or opportunity have never been able to satisfy themselves respecting the mode in which Ferns are really fertilised.

The term "Cryptogamia," which signifies Hidden Marriages or Unions, was applied by Linnæus with singular appropriateness at the time to those numerous members of the vegetable world, Ferns, Mosses, Fungi, and Algae or Seaweeds. Although at that time nothing was known of the sexual organs in Ferns, and comparatively little of the other cryptogams, yet, reasoning no doubt from analogy, it is evident from the name he gave them that Linnæus thought it probable such organs existed. The matter was then a mystery to naturalists, and continued so for many years; indeed but for the improvement effected in the construction of the microscope and its greatly increased magnifying powers the subject could never have been elucidated even by the most careful and assiduous investigators. The attention of observers had been naturally directed to the fronds in the expectation of discovering some clue to the mystery, but in vain, for all that could be ascertained was that certain minute seed-like bodies termed spores were produced upon the under surfaces or margins of the fronds, and that where these spores fell Ferns arose. The first growth of the spore, the peculiar flat green liverwort-like prothallium, was entirely overlooked, and yet there were what had been so eagerly sought—the "flowers" of Ferns.

About the year 1840 a great botanist of Zurich, Professor Nägeli, while engaged in investigating the subject, discovered that the reproductive organs existed upon the under side of the prothallium, but he only observed the minute body subsequently termed the antheridium, because it is analogous in its functions to the anthers of flowering plants. A few years afterwards this most important discovery was confirmed by Count Suminski, who also detected another body which answers to the pistil of flowers and is termed the archegonium. The accounts that were published of these remarkable discoveries it may be readily imagined were received somewhat incredulously by many, especially those who in accordance with an eminent botanist believe that Ferns were devoid of all reproductive organs. Since that time, however, the observations of the two gentlemen mentioned have been abundantly proved to be correct and are generally accepted, although Mr. Eadon still continues sceptical, but I hope to convince even him before concluding my remarks.

In Mr. Moore's "British Ferns," published in 1857, the subject is thus referred to: "The germination of the spores of Ferns has lately excited much inquiry, the result of which leads to the inference that something like sexuality exists among all the higher groups of cryptogamous plants—a kind of fertilisation takes place in the prothallus or germ-frond." In another part of the book is this passage—"The production of certain intermediate forms of Ferns and allied plants of the nature of hybrids is suggestive that something like fertilisation does occur among cryptogams." We see from these quotations that Suminski's discovery and explanation were readily accepted

by one who had made Ferns an especial study, and who was not likely to decide in favour of a statement without sufficient evidence. Among many other more recent writers on Ferns an eminent authority, E. J. Lowe, Esq., has fully corroborated what had been previously written upon the subject of fertilisation; and in the "European Ferns" by Mr. Britten, now being published, similar views are adopted; in fact the matter has been so repeatedly explained that it is now beyond all dispute. To render the subject as clear as possible I will endeavour by the aid of the annexed engravings to explain how the fertilisation is really effected in the prothallium. In doing so I will briefly trace the life history of a Fern.

Everyone knows that the dust-like bodies found upon the fronds are analogous to the seeds of flowering plants, and are technically termed spores. Now these spores, although popularly considered as seeds, are quite distinct from them in structure. Every true seed contains a plantlet or embryo, which under suitable conditions enlarges and ultimately becomes a plant more or less resembling its parent, whereas the spore is simply a vegetable cell containing no embryo, and increases by cell-division until the green expansion known as the prothallium is formed. In figure 23, 1 represents the prothallium

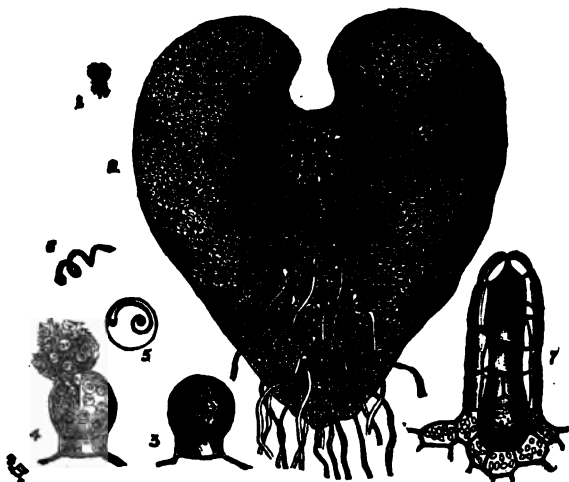


Fig. 23.

of *Aspidium Filix-mas* of its natural size, and 2 is the same much enlarged. Upon the under surface are produced the antheridia and the archegonia, the former generally among the rootlets, and the latter near the indented portion; 3 represents an antheridium not fully matured, and 4 shows one from which the antherozoids are escaping. The latter, which may be considered as analogous to the pollen grains of flowers, are extremely minute spirally twisted filaments often furnished with cilia or hairs, and apparently endowed with motion. Whilst contained in the antheridium they are rolled up in tiny cells from which they soon escape; 5 represents an antherozoid cell, and 6 a liberated filament; 7 is the archegonium, which is hollow in the centre and has at its lowest portion a cell that is termed an oosphere or germ-cell. When the antherozoids escape from the antheridium they float or swim about until some enter the archegonium and penetrate to the germ-cell, which thus becomes fertilised. A change is effected in its constitution—cell-division commences, the first young frond arises, and the first root descends. This is shown in figure 24, where P is the prothallium of *Adiantum Capillus-Veneris*; d, the young Fern; r, its first and second roots; and h the root hairs of the prothallium. As growth continues the frond enlarges, an axis is gradually formed, more fronds appear and finally bear spores similar to those from which the plant originated. What is very remarkable, too, although fertilisation only takes place once, yet the Fern will continue to produce spores throughout its life, perhaps for a great number of years.

Such is the manner in which Ferns are reproduced, and considered in all its bearings it constitutes one of the most extraordinary phenomena of the vegetable world. Not only as regards the extreme minuteness and peculiar position of the parts concerned in the operation, but also from the fact that it affords an instance of what is known as alternation of generations. The spore, the apparent seed, gives rise to the

prothallium, really a cellular plant quite dissimilar from the parent Fern; while after fertilisation the second generation is produced—viz., the true Fern, which usually resembles the original form that yielded the spores. It appears, however, from experiments tried a few years ago by Mr. Lowe that the impregnation is not effected unless the prothallia are exposed to strong light. He thus described his experiments before the Birmingham Natural History Society in 1877—"Three years ago a large Wardian case was prepared, and on the surface of the soil were scattered the spores from a number of varieties of *Scolopendrium*, *Lastrea*, *Athyrium*, and *Polystichum*, each species being in a separate partition. This case was placed in a dark corner under a plant stage. At the end of six months the soil was covered with prothallia. A second case was then prepared, in which patches of the germ fronds were transplanted. This case was placed in a light part of a greenhouse having a north aspect. Under these circumstances the transplanted patches grew rapidly, whilst those in the case from which they were taken had made little or no progress; and in six months the second case was filled with fronds, but not one had appeared in the original case." Two other cases were treated in the same manner as the last mentioned and with similar results, the prothallia in the first shaded case remaining dormant for three years, but those that had been freely exposed to light produced fronds in the usual way.

I now come to the subject of cross-fertilisation and the production of the numerous intermediate forms and varieties of our British Ferns. Mr. Eadon adduces certain instances where spores collected from a particular Fern were sown, and among the young Ferns produced were some of very distinct character, but he does not state what method was adopted to exclude other spores. It is well known to Fern-growers that unless great care is exercised in this respect it is almost impossible to obtain plants of only the species or variety required; some others are sure to appear, perhaps in sufficient numbers (especially if of strong growth) to entirely destroy those it was desired to raise. It is extremely difficult to prevent the prothallia of different Ferns being produced together, and wherever they are in proximity there is a possibility of cross-fertilisation occurring. Respecting this Mr. Lowe in the lecture referred to above said, "Let an example be taken in the Lady Fern, where a number of varieties were sown together. Now if the spiral filament from the variety *Victorise* be tossed into one of these female cells we may naturally expect the fronds when they do appear to be more or less cruciform like those of the variety *Victorise*; whilst if the filament had been thrown from the variety *multifidum* instead, the result would be quite a different plant—a multifid but not a cruciform variety, under which circumstances there would probably result a combination of the two forms. Hence the endless varieties that are now seen in a good collection." It appears that crosses are more easily obtained between varieties of the same species, for very few probable hybrids are known; but these are characterised by the usual sterility of hybrids and produce no spores at all, or else those they do bear are imperfect in some way, so that nothing can be obtained from them. The best known supposed hybrids among British Ferns are *Lastrea remota*, *Asplenium microdon*, and *A. germanicum*; while among exotic Ferns *Adiantum farleyense* and the recently raised *A. Bausei* may be considered as similar examples.

It is possible, however, to obtain distinct varieties without cross-fertilisation, for it has been found that spores gathered from different portions of an abnormal frond occasionally give rise to very dissimilar forms; and thus if on a frond only one portion should become strangely formed and happen to be fertile it may be propagated by sowing the spores on that part alone. It seems, too, that when once a tendency to change is induced in a species it is easy to increase the number of varieties, but it is difficult in some instances to start this mutability. Excessive luxuriance appears to be antagonistic to the production of abnormal forms, and in a wild state these are more

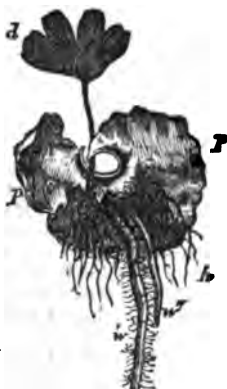


Fig. 24.

generally found where from some circumstances the plants are growing somewhat stuntedly.

No doubt much of what I have stated will be new to many readers of the Journal, but all the facts admit of easy proof, and I would suggest that those who have the opportunity should institute a few experiments in connection with the origin of varieties. Spores from different Ferns should be sown together as thickly as possible, for then the prothallia are closely pressed against each other and the edges become nearly vertical, and this is considered to facilitate the passage of the antherozoids from one germ-frond to the archegonia of another. The soil should also be carefully prepared, and it is well to destroy all animal matter it may contain by submitting it to the action of fire, afterwards rendering it sufficiently moist with distilled or boiled water. The pots must be placed in pans kept constantly filled with water, and the spores may then be sown upon the surface of the soil, a piece of glass being placed over the top to prevent too rapid evaporation. The young Ferns when large enough may be transplanted into other pans and ultimately potted off singly. Of course the temperature in which the spore pans are placed must be regulated by that required for the Ferns which produced the spores.

The budding theory upheld by Mr. Eadon I have not yet mentioned, because I am not aware that Dr. Farlow's observations have been confirmed; and even though they be correct it is probable that the reproduction of Ferns without fertilisation is only an occasional and exceptional circumstance, and cannot invalidate the facts that have been detailed. What is already known concerning Ferns is amply sufficient to account for the production of varieties, and I cannot conceive how the acceptance of such a theory could render the matter more easy of comprehension. It is now known that throughout the vegetable kingdom, from the highest of flowering plants to the microscopic unicellular Algae, reproduction is effected by a sexuality that only differs in the complexity of the parts which perform the functions. The principle is identical in all.—LEWIS CASTLE.

USES OF A MUSHROOM HOUSE.

It was some time before I could find a suitable place in which to store such plants as *Caladiums*, *Gloxinias*, and *Achimenes* during their resting season, for if retained in the stove they impart a very untidy appearance to it; yet to store them with safety a temperature of 55° to 60° is required. I tried numerous places, but without success, for some were too hot, others too dry, and others too wet or cold. At last I thought of the Mushroom house, and there the temperature and atmosphere being just what the corms and tubers require, I store my plants during their resting period. I also find that seeds of all kinds germinate well in the Mushroom house, indeed it is the best place to start seeds that require to be grown in pots, such as Peas, Beans, *Cinerarias*, and *Lobelias*. However, the seedlings must not be allowed to remain in the house after they appear above the soil. The young plants when removed to another position will require to be shaded until they have become accustomed to the change. A warm Fern house with a north aspect is very suitable for them. A warm frame well shaded no doubt would answer as well. If it is asked what advantages there are in raising seedlings in the Mushroom house, I reply, It is always ready, and it is the surest and safest means I have yet adopted, except the propagating pit, for germinating seed, with far the least trouble and labour.

There is still one other use for the Mushroom house, for besides forcing *Seakale*, *Rhubarb*, blanching salads, resting stove bulbs and raising seedlings, it is useful for starting many deciduous shrubs and herbaceous plants to yield a supply of flowers. It must, however, be remembered that no evergreen plant will succeed in the Mushroom house nor any plant in active growth.—JOHN TAYLOR, *Hardwicke Grange*.

SIKKIM RHODODENDRONS.

THERE are a number of these shrubs perfectly hardy. I advise all lovers of Rhododendrons to plant *R. Thompsoni*, as it is one of the finest of the Sikkim species, not only being hardy, but it blooms most profusely, grows freely, and a large plant in full bloom is not soon forgotten. In the grounds of Penllergare, Swansea, the seat of J. D. Llewelyn, Esq., several species of Sikkim Rhododendrons succeed remarkably well. I consider *Thompsoni* the finest of all. There is a fine specimen at Penllergare which has not had the slightest pro-

taction during the last twenty-three years. I have also planted many layers of it in the woods, where it grows as freely as *R. ponticum*, and it is planted in different parts of the pleasure grounds with equal success. I believe the Penllergare specimen of *R. Thompsoni* was the first that flowered in England. It produced flowers in 1858. Many Sikkim *Rhododendrons* succeed better planted out of doors than when grown in the greenhouse. I saw a plant of *R. Fortunei* a month since in Messrs. Veitch & Sons' nursery, Coombe Wood, not injured in the slightest degree by the severe weather. I also saw a specimen of the same species planted out in a conservatory, and it was very unhealthy, not nearly so fresh and luxuriant as the one in the nursery at Coombe Wood; *R. barbatum*, *R. arboreum*, *R. Falconeri*, *R. Hodgsonii*, *R. glaucum*, *R. ciliatum*, and a few others also succeed better out of doors than under glass. Will any of your readers who have grown Sikkim *Rhododendrons* out of doors state what species have succeeded best?—JOHN NUNNS, *Asherton Grange, Wimbledon*.

GROWING GRAPES—PRUNING PEACH TREES.

ALLOW me a few lines on that paragraph of Mr. J. Nunn's article "How to Grow Good Grapes," with reference to shanking. The amount of vegetable fibre and manure added to many borders I have noticed more than once to produce shanking. I have just planted a viney, the staple of the border being yellow friable loam without a bit of turf in it, nor any vegetable manure. Inch bones, bonemeal, soot, and lime rubbish in a rough condition are the only additions to the loam. I shall be greatly surprised indeed should the Grapes from these Vines shank. There is another item in the management of Vines which I have no doubt is indirectly conducive to shanking, and that is the prevailing practice of growing them in a close steaming atmosphere. The drier and airier they are kept, all other points being equal, the healthier will the Vines be. We have fair crops of Grapes from Vines which have not been in very good condition for some years, and these are never syringed nor the vineries damped down at any season.

With regard to Mr. Luckhurst's note on pruning, I have been obliged to cut back the young shoots of all kinds of wall trees with the exception of some Apricots, and just because the ends of the shoots were not ripened sufficiently to produce good results. The answer Mr. Luckhurst gives to his own query is certainly correct. It is quite unnecessary to shorten-back the young shoots of the previous year's growth. He is certainly a little wide of the mark in talking of "stunted growth" and "small fruit" as the result of leaving these shoots unshortened. If trees are healthy at the roots I find they produce as many growths as can be laid in without having recourse to cutting-in the growths to produce others. Here is another query—What is the use of cutting-back shoots in order to induce an abundance of lateral growths, the most of which require removal for want of space to utilise them?—R. P. BROTHERTON.

THE EXTENSION SYSTEM APPLIED TO SOFTWOODED PLANTS.

As the knife is too much used for hardwooded plants and trees, so are the finger and thumb for plants of softer and quicker growth. We are reminded every week in some of the gardening journals that climbing and trailing plants, such as Cucumbers, Melons, Tomatoes, &c., must be stopped at a certain joint, or success cannot be expected. There are various reasons given for such practice, none of which bear examination; but those who give the advice have never tried any other plan, and therefore have not discovered that over-training and over-nursing is as detrimental to the subjects of the vegetable kingdom as it every day proves to be in the other great department of Nature, in both of which it leads to degeneracy and an absence of the elements necessary for independent support.

In treating of the subject "Extension versus Restriction" I must, however, begin at the beginning—i.e., with the parent stock from which the plant is to be raised. A seed which will germinate, or a cutting which will emit roots, is to many people all that can be desired; but I am afraid there are some severe lessons in store for us on this point during the present year. I have no doubt that most of the seed which will be sent out by nurserymen will germinate under favourable conditions; but if anyone supposes he is going to gather an average crop of Marrow Peas, for instance, in the beginning of July,

however fine the season, he will be woefully disappointed. It is quite possible that Marrow Peas sown outside before April will not germinate at all. Even when later sowings germinate freely they will be very weak, and thick sowing will only make them weaker still. It is necessary, of course, that the better kinds of Marrow Peas be sown for the sake of keeping the stocks in existence, and if possible to get a few dishes for the tables of those who know what a good Pea is; but I intend not to trust all my eggs in one basket, and shall almost certainly have a continuous supply of Peas from June to October, though they may not always be Marrowfata. The seed of the round varieties, which are hardier and earlier than the Marrows, ripened fairly well last season and may be depended on, but the appearance of the Marrows is certainly not reassuring. I have had one lesson already as to the quality of seeds this season. I have generally been able to save seed of French Beans for early forcing from plants which were grown well and strong, and which ripened in the best part of summer; having found that seed saved thus carefully generally possessed more vigour and vitality than anything I could buy, and would not fail to produce a crop if sown during the worst part of the year. Last season no seed ripened here outside, so when my own stock was exhausted there was no choice but to buy. The trouble and expense might just as well have been saved, for those sown in December germinated very weakly indeed and were thrown away. Later sowings as a matter of course are coming on better. If anyone says it has been a bad season for forcing I do not agree with him as far as softwooded plants are concerned, for since the beginning of January we have had more sunshine than is usual at this time of year, at least in the dull western counties. Fruit-trees cannot be expected to force well owing to the absence of sun during the summer months.

Having attempted to make it clear that the constitution of seedlings depends to a great extent on the parent plant and the conditions of harvesting I will say nothing about storing and keeping, as that I believe is generally admitted to be important, but will at once proceed to the sowing season. I wonder how many millions of plants are ruined in constitution every year by sowing thickly or from being allowed to remain in the seed bed a day or two longer than is good for them. They may not be killed, but can any reasonable person suppose they give half the return, whether it be in the shape of pleasure or profit, that a tenth part of their number would give if properly treated? To make the most of a softwooded plant there should not be a check of any kind from the moment the seed or cutting which produces it begins to show that it has an independent vitality. In practice this is not always possible with small plants, but that is no excuse for disregarding it with those which are of larger growth.

The average gardener, if he wants a couple of Cucumber plants, usually sows at least half a dozen seeds in one small pot, leaving them there till the little plants are 2 or 3 inches high and with their roots matted together; he will then pull them apart and pot them separately into small pots, burying some 2 inches of the soft stem, shade them till they have started afresh, allow them to remain probably a day or two too long in such small pots, and then either repot or finally plant them out, in either case burying some more of the elongated stem. Your readers will acknowledge that this is not an extreme case, but is what may be called the general practice; and supposing the soil to be warmed, the plants potted carefully and shaded till they start afresh each time the roots are disturbed, what is generally called a successful crop will probably follow. But why mutilate the little plants at all? It is less trouble in the long run to grow them separately from the first, and I am sure you will thereby gain at least a week in point of time, and you will gain a great deal more in the constitution of the plants. If seeds of Cucumbers or Melons are scarce I sow singly in 4-inch pots; otherwise two seeds are placed in a pot near the middle and about an inch apart, one of which is pinched off immediately it can be seen that the other has germinated perfectly. As soon as the roots reach the sides the plants are shifted into 7-inch pots, and if they are wanted to grow in the best possible manner the roots must not be allowed to run round even these larger pots. No stem is buried at either potting or planting, but small sticks are used for supporting the little plants as soon as their seed leaves are becoming somewhat heavy. I have had the seed leaves remaining perfect when the plants were six months old—a sure sign, I think, that the plants had not been much mutilated. Plants which have their wants anticipated seldom require

pinching or cutting; some of the best Melons indeed will not endure it, the Cashmere variety which I grow being quickly ruined if the knife is applied to it. It likes to extend in a natural manner, and will quickly fill a large house. From one plant in 1878 forty fruits were sent to table between the 3rd August and the 1st November, some of which weighed 6 lbs. each, and none I think less than 3 lbs. I do not recommend this variety for general use, as it is the most difficult one to grow that I am acquainted with, but unfortunately for me my employers know its value too well to allow me to discard it. It cannot, I think, be successfully grown in a frame, and those who would grow it must give it a good house and allow it to ramble.—
WILLIAM TAYLOR.

NOTES AND GLEANINGS.

A LOW night temperature and a moist yet well-drained border are such important factors in the SETTING OF NECTARINE AND PEACH BLOSSOMS that we draw especial attention to the fact now. Whenever the slightest suspicion exists of a saturated border it would be better to keep the pipes cool and wait a week or two for the fruit, rather than run the great risk of losing it which the application of heat involves under such circumstances.

MR. R. INGLIS asks if any of our correspondents who have had practical experience in making ASPHALT WALKS can communicate information as to the best means of forming them, the materials used, and the probable cost per yard.

A CORRESPONDENT writes, "GARDENIAS are late coming into bloom this season, but are wonderfully well set, with flower buds, although the past season was so deficient in sunshine, and our plants nearly all made a second growth. Small plants in 4 and 5-inch pots are bearing eight to ten blooms each. The old *Gardenia citriodora* is worth growing more largely for the sweet fragrance of its small white Orange-like blossoms."

THE lovely and fragrant *BORONIA MEGASTIGMA* is now fully in bloom at Melton Constable. Plants in 3-inch pots are bearing between 250 and 300 blooms. Mr. Clarke finds peat and a dark loam suit it admirably, and he expresses surprise that this beautiful plant is not more frequently seen in gardens. A number of small plants are also flowering freely in the greenhouse at Kew.

AN experienced grower writes, "I would remind those conducting the early FORCING OF ROSES at this season of the year, when mildew appears upon the plants, that there is nothing so good and effectual in its destruction as soft soap. It should be used every time when syringing. Boil 2 lbs. of soap in four gallons of water, and then place half a pint of the mixture in every large canful of water for syringing."

THE SHROPSHIRE HORTICULTURAL SOCIETY have arranged for their show to take place on the following dates—Rose Show, July the 1st; Summer Show, August the 18th and 19th; and the Chrysanthemum Show on November the 18th. The prizes offered are, as usual, liberal, the highest being those in the chief class for twenty stove and greenhouse plants to be exhibited at the Summer Exhibition—viz., £20, £15, and £10. The Society continues in a very flourishing condition.

THE following HORTICULTURAL SOCIETIES will hold their exhibitions on the undermentioned dates—Fareham and South Hants, July 7th; Weston-super-Mare, August 10th; Reading, May 20th and August 19th; Ealing and Hanwell, March 29th, July 7th, and November 17th; Lee and Blackheath, June 28th and 24th, and November 24th and 25th; Borough of Hackney, November 18th and 19th.

THE schedule of the CANTERBURY AND EAST KENT ROSE SOCIETY enumerates eleven classes, in one of which—the nurserymen's class for thirty-six varieties—prizes of £8, £5, and £3 are offered. The Society is under very distinguished patronage, including among many others their Royal Highnesses the Duke and Duchess of Edinburgh, the Marquis and Marchioness of Conyngham, and the Earl and Countess of Guildford.

THE HYBRID FORMS OF ABUTILON are well worth growing from seeds on speculation. We have now plants in flower of bright yellow, white, and orange red, with deeper coloured veins, and one that succumbed to the hardships of decorative life during the last severe frost was of peach or salmon colour. These are from seeds sown last spring. During the summer they were somewhat starved, and being afterwards grown on have now reached from a foot to about

18 inches high, and some commenced to branch naturally at about 8 inches from the pot. With handsome flowers the leaves are also good.—L.

IN Mr. B. S. Williams' Nursery at Upper Holloway many handsome ORCHIDS are now in flower, and others are promising well for a fine display in the course of a week or two. Two remarkably large specimens of *Oncogyne cristata* are bearing numbers of flowers, which have fortunately escaped the destructive effects of the fog, owing to their being somewhat later in blooming. *Cattleya Warscewiczii* and its aptly named and beautiful variety *delicata*, are in fine form. The latter is an exceptionally handsome Orchid, the labellum being much larger than in the species; the whole flower being very faintly suffused with pale crimson or purple. A very fine variety of *C. Trianae* and the white form are also in flower; and *C. Russellianum*, which has a labellum tipped with extremely rich crimson purple, the sepals and petals being faintly tinged with the same colour. Among others are *Goeldiana macranthum*, with exceptionally large flowers even for that species; *Dendrobium palmulinum*, a pretty species with small flowers, and exhaling a delicious fragrance resembling the odour of Primroses; and the well-known *Saccolabium giganteum*. The enormous specimens of *Cypripedium villosum* are in excellent health and will soon be in flower; one is bearing twenty-five spikes, and the others have nearly as many.

IN the same nursery we also observed a NEW AZALEA named MRS. GERRARD LEIGH, which Mr. Williams intends sending out during the present season. It resembles the *Osmundoea* varieties in general appearance, partaking of the character of *amona*, and the varieties of *indica*, but is superior in colour and floriferousness to any of the former we have seen. The foliage and habit of growth is similar to *amona*, but the flowers are very much larger, well formed, of an extremely bright crimson colour, which seems to be slightly tinged with pink, and they are borne in dense heads of moderate size on long stems, which renders them well adapted for cutting purposes. The plant is said to flower naturally at Christmas without being subjected to the slightest forcing.

A CORRESPONDENT recommends THE PROPAGATING BOXES that he is employing this season. They are simply ordinary cutting boxes, 4 inches in depth. Drainage material is first placed in the bottom, then a very shallow layer of soil, and an inch in depth of sand, into which the cuttings are inserted. The surface of the sand, being 2 inches from the top edges of the boxes, affords room for the cuttings underneath two large panes of glass which are placed across the top of each box, and then the boxes are placed on the flow pipe of a Cucumber house, and the propagating box is complete.

AMONG the numerous floral treasures introduced into our gardens from Japan *AZALEA MOLLIS* is one of the most useful. There are some twenty select varieties of it already in cultivation, most of which we lately saw in full beauty in one of the conservatories at Buxted Park. The flowers are much larger than any of the Ghent varieties; are of fine form, embrace many shades of pink, red, and yellow, all of exquisite delicacy; are abundant and in large bold clusters, and naturally expand so early in the year that with gentle forcing they open in an unusually short time and continue in beauty for a month. The plants are deciduous, but the foliage appears to come as readily as the blossom, and affords a pleasing contrast to the bareness of some Ghent specimens in full flower but without a leaf.

AN EXHIBITION OF SPRING FLOWERS AND PLANTS AT THE VESTRY HALL, TURNHAM GREEN, is contemplated during the month of April next, and it is intended by the promoters that any surplus funds after defraying the necessary expenses shall be devoted to the West London Hospital. Mr. Francis N. Dancer, in a circular directing attention to, and soliciting aid for, the object, observes:—It is somewhat remarkable that, whilst flower shows and exhibitions have been established in almost every parish throughout the length and breadth of the land, Chiswick—the home of the Royal Horticultural Society, the founder and originator of all such meetings—has had no flower show of its own, being in this respect far behind Acton, Ealing, Richmond, and neighbouring parishes, which have each their horticultural society and their flower shows, such exhibitions forming the most fashionable and enjoyable réceptions of the season. An influential Committee has been formed to carry out this exhibition, the object in view being the promotion of floriculture, and a diffusion of the love of flowers and plants amongst the people.

— THE twenty-ninth annual Exhibition of the OXFORD ROSE SOCIETY will be held on July 6th in the beautiful grounds of Headington Hill Hall, by permission of G. Herbert Morrell, Esq., and Mrs. Morrell. Mr. Greenaway, Paradise Square, Oxford, is the Secretary of the Society.

— THE FARNINGHAM ROSE AND HORTICULTURAL SOCIETY'S SHOW will be held at Farningham on June 30th. The prizes for Roses are very good, and the National Rose Society's silver and bronze medals being added to the amateurs' classes for twenty-four and twelve blooms respectively.

— We have received a number of PRIMULA FLOWERS from Mr. Cannell of Swanley, which are remarkable for their great variety of colour, some being extremely rich, others novel, and all of good form and substance. Mr. Clarke of Melton Constable has also sent us several varieties of fine flowers, which he has grown extremely well from seed obtained from Messrs. Carter & Co.

— We have received the schedule of prizes of the Great Show of the MANCHESTER BOTANICAL AND HORTICULTURAL SOCIETY, which is to be held in the Society's gardens at Old Trafford from May 14th to 21st inclusive. All the prizes are offered in money, and are on a scale of liberality that will ensure an exhibition of great magnitude. The schedule is in two sections—amateurs and nurserymen, and the number of classes is seventy-three. In the amateurs' classes we observe £60 is offered in three prizes of £30, £20, and £10 for twenty plants, ten in flower and ten foliage. The first prize for eight stove and greenhouse plants is £10, and for fifteen Orchids the amounts offered are £18, £12, and £7; and for nine Orchids £9, £6, and £4. The first prize for six greenhouse Azaleas is £8; for eight fine-foliage plants £6, and the same amount for eight stove or greenhouse Ferns. The prizes in all the other classes in the section are also good, amongst which we notice £10, £6, and £4 provided for twenty miscellaneous plants in or out of flower, in pots not more than 14 inches in diameter. Prizes of the same amount as those above referred to are offered in the nurserymen's section for specimen plants and Orchids, with others of £25, £15, and £10 for twelve large Roses, and £14, £10, and £5 for ten large Azaleas. £10 is also provided as the first prize for a group of twenty Roses; and £8 is offered as the chief prize in the Pelargonium and Erica classes; prizes of similar value being provided for Hollies or hardy evergreen trees and shrubs, with £40 in three prizes for thirty Clematises. The total amount offered in prizes exceeds £1050. Such great inducements to exhibitors coupled with the popularity of Mr. Bruce Findlay must, weather permitting, command a success equal to those that it has been our pleasure to record during past years.

— THE report of the Committee of the GARDENERS' ROYAL BENEVOLENT INSTITUTION for the year 1879 shows that during the past year nine pensioners have died, one leaving a widow, who, in accordance with the rules (having produced the necessary certificates to the satisfaction of the Committee), succeeded to a pension of £12. In the same period seven pensioners have been added, and a further addition of nine will be made. The pensioners added in January, 1879, were all placed on the list without election, they or their husbands having been subscribers to the Institution for over fifteen years. This was in strict accordance with the rules. The nine pensioners referred to have (or their husbands) been subscribers, and they also will be placed on the list without any trouble or election. These additions ought to bring home to the minds of gardeners the advantages of the Institution, and the assistance they could receive (in the event of their being subscribers) in their declining years should want and distress overtake them, as among the number of applicants are several who have been constant and warm supporters of the Institution, occupied good positions (one was many years a member of the Committee), and never imagined that they would ever require the aid of the Institution. The thirty-sixth anniversary dinner is reported a grand success. Owing to the great depression in trade and bad weather, when most other societies of a similar nature have suffered very materially in their annual income, and in many cases have had to trench upon their reserve funds, this Society—thanks to the exertions and influence of the Stewards, has not only increased the amount of its reserve fund by £300, making the total amount £12,000 in the 3 per cent. consols, thus placing the Institution on a firm and secure basis, and having a sure guarantee that all its engagements can be met, but it has been enabled to increase its payments to the pensioners to £1043 13s. 4d., the largest amount ever

yet paid in one year. Great efforts were made by the Stewards and the Committee to increase the annual subscriptions; and although on the last occasion the Committee congratulated the subscribers upon receiving the largest amount ever recorded—viz., £802, the annual subscriptions have been increased to £878. The Committee regret the loss of several of their liberal benefactors; among them may be named the Baron Lionel de Rothschild, William Wilson Saunders, Esq., and Mr. Sergeant Cox. They also gladly announce a legacy of £15 from an old gardener, the late Mr. William Lennett of Norwood. This they consider most pleasing, coming as it does from one for whose benefit the Society was instituted. The Committee earnestly hope that the members will continue to use their influence among their friends, and will not relax in their exertions to make the year 1880 more successful than the year now passed away. The number of pensioners is as follows:—Thirty-six men at £16 per annum; thirty-six women at £13 per annum—total, seventy-two, to be increased to eighty-one.

EUCCHARIS AMAZONICA.

I CAN fully endorse what your Clonmel correspondent says respecting the value of the above. No flowers, I think, can be more beautiful than the chaste white blooms of the *Eucharis*, their perfume is so pleasant also. I have lately had two plants in bloom, one having had twenty-one and the other nineteen scapes, with an average of six blooms on each, the latter plant having thrown up thirteen scapes last November, but they were not the same bulbs that have just bloomed. The compost I employ is a good loam, decayed cow manure, charcoal not too large, and a good quantity of brickdust. A temperature of 65° to 70°, and a gentle bottom heat when the plants are growing, with a plentiful supply of water and a liberal use of the syringe will reward the grower with some of the most useful flowers for various decorative purposes.—JAMES ANTH, *Natley Castle*.

KITCHEN GARDEN NOTES.

As the season is approaching for the sowing and planting of crops, it may be well to note those which have proved serviceable during the severe winter. I consider the beginning of March quite soon enough for sowing Onions and other crops, trusting to fine weather during April and May to ensure free growth and full produce.

First in usefulness amongst green crops must be placed Brussels Sprouts, which in many places have not sustained the slightest injury by the severity of the winter. The best-selected Broccoli, Cabbage, Savoy, or even Curled and Cottagers' Kale, cannot be compared with the Sprouts for general usefulness. Cottagers and others requiring a constant supply of green vegetables during all weathers should grow Brussels Sprouts almost exclusively.

If last winter and the present one are types of future winters, winter Broccoli will scarcely pay for the seed they are raised from. After a month of severe frost there came a mild week or two about the beginning of January, and Veitch's Broccoli although it suffered during the frost produced some fine heads. This is about the only Broccoli we have yet cut from. Amongst those which have resisted the frost well none look more promising than Gilbert's Selected Burghley Champion. Savoy is useful but coarse. The same may be said of Cottagers' Kale. Leeks are really a most useful hard-weather vegetable, and when well blanched and properly cooked we have known them approved of at the most select dinner parties. A gentleman who was lately shooting here requested us to send him a few dishes of our Leeks to London.

Turnips are also in request during all weathers. The bulbs fully formed before winter, or sown in September, become hot and tough before the winter is over, and to have them in the best condition they should not be fully grown when used. To obtain them like this it is necessary to sow them at different times in autumn, but if sown too late disappointment will follow in severe winters. Our most useful Turnips this winter are those sown on the 30th of July. Those sown on the 11th of August have not become large enough, while others sown on the 8th of September have failed to "bulb." Had the winter been mild this last sowing would have come well in now and later in the season. In future we will endeavour to provide a full winter supply by sowing a good breadth during the first week in August.

Few vegetables make a choicer dish in winter than *Salady*.

May is early enough to sow the seed, and fine roots are produced under the same conditions as Beetroot or Parsnips. They are not easily injured by frost, but they keep as well and are more convenient if lifted and stored in sand in a cool place under cover.

Silver Beet, or Seakale Beet as it is termed, is a much hardier vegetable than the ordinary Beet. It is the midrib of the leaves of the silver variety that are cooked, and these are still fit for use after much frost. They are standing where they were sown.—A KITCHEN GARDENER.

ORCHIDS AT CHELSEA.

ALTHOUGH the Orchids in Messrs. Veitch's nursery at Chelsea have lately undergone a trying ordeal—dense fogs, which have caused the *Phalenopsis* flowers to fall in shoals, still the plants generally were perhaps never in a more thoroughly healthy condition than they are now. Many are flowering freely, and there is great promise of the display increasing in richness as the season advances.

Several *Dendrobiums* attract notice. *D. splendidissimum*, the result of a cross between *D. heterocarpum* and *D. macrophyllum*, commands attention by its free-growing and profuse-flowering character. Its bluish white petals and sepals contrast effectively with the extremely dark rich purple lip, and render the plant very striking. Although resembling *D. Ainsworthii* it is distinct from that variety, and was certificated at the last meeting of the Royal Horticultural Society. *D. micans* is a new variety of great promise. It was raised from the old *D. Wardianum* and *D. luteiflorum*. The lip is of the most excellent form, being broad, round, and smooth. The ground is white, with a shimmering of yellow, and with a clearly defined margin of dark lilac or porcelain blue. The throat is faintly pencilled, and contains two solid nearly black blotches, the same as *D. Wardianum*; the sepals and petals are lilac, like those of *D. luteiflorum*. The plant is yet small, and is deservedly cherished. *D. Dominii* is flowering freely. Its parentage is *D. moniliforme* and *D. nobile*; the prevailing colour is bright lilac, with a dark blotch on the white of the labellum. The plant is flowering with great freedom, and has a pleasing and lively effect. *D. Farmeri* is charming by its soft primrose tint; and very delicate is the pendent *D. Pierardi*, and the larger yet chaste and fragrant *D. primuminum*, one variety being nearly white. *D. Findlayanum* is showing freely, and is remarkable by its peculiarly swollen internodes, the growth almost resembling a number of eggs strung together. Some very fine examples of *D. Wardianum* are in beauty, and very shortly *D. crassinode* will be seen in grand condition. The plants are in small saucers suspended from the roof; the growths are quite extraordinary by their strength, and are studded with swelling flower buds, mostly produced in triplets. The striking *Angraecum sesquipedale* is flowering, as also is the charming miniature *A. citratum*. A plant of this species is showing thirteen spikes, and the small waxy *Lobelia*-like flowers will expand in about a fortnight. A few *Phalenopsis* are flowering; but a houseful of *P. Schilleriana*, even without flowers, is a sight worth seeing. The plants are in saucers—some suspended, and others placed on the stage. Some of the marbled leaves are 15 inches in length, the saucers in which the plants are growing being only 4 inches in diameter, and less than 2 inches deep. Several *Odontoglossums* are flowering, and the flower spikes of others are numerous and strong. *Cattleyas* are in excellent condition. Some good varieties of *C. Trianae* are flowering; and *Ada aurantiaca* produces a brilliant effect.

All the plants command attention by their health, cleanliness, and the smallness of the pots in which they are grown; indeed, small pots, ample drainage, and copious waterings during the growing season constitute the secret of the satisfactory condition of the plants.—VISITOR.

GALVANISED WIRE.

A LITTLE careful observation will most probably convince your correspondents who have been troubled with the supposed galvanic action of the zinc, that the injury to their Peach, Nectarine, and other fruit trees is really the result of frost-bite. Take for instance the case of "T. H." given on page 119. He says he grew Vines, Melons, and Cucumbers on painted wire without injury, but found Peach, Apricot, and Nectarine shoots on unpainted wires destroyed, and supposes the paint saved the former; but I should say they were

uninjured because their growth is not subjected to frost, and my own experience clearly points to frost as the *origo mali*, because I find the injury occurs in winter only. I send you some twigs of Peach shoots to show the nature and extent of the injury. They are taken from an orchard house in which the trees are trained as cordons across the roof at about 18 inches from the glass. When the leaves fell in November I carefully examined the trees and found no injury, but on looking over the house after the recent frost I find all unripe wood wherever it is in contact with a wire is destroyed, well-ripened shoots escaping with little or no injury. The remedy is simple enough—cut out every bit of injured wood and plant again if necessary, and to prevent a recurrence of the evil unfasten every tie and give two or three turns of the matting, soft string, or whatever material is used in fastening the shoots before rebinding. Paint or any covering to the cold iron will answer just in proportion to its thickness or non-conductibility, but replacing the iron with copper wire will prove a costly mistake. In a climate with such extreme and rapid fluctuations as ours, no plant should be placed in contact with any metal. The notion that lightning has anything to do with it is a delusion, as in such a case the wires would be fused-up.—ESSEX.

[We shall be glad to hear if other of our correspondents whose letters we have published, have observed that their trees have only been injured during the winter months. The shoots sent by "Essex" are much injured, and so are some others that we have received. It is important that the real cause of the injury be ascertained, and it appears to us essential to know whether the trees are injured in summer as well as winter.—EDS.]

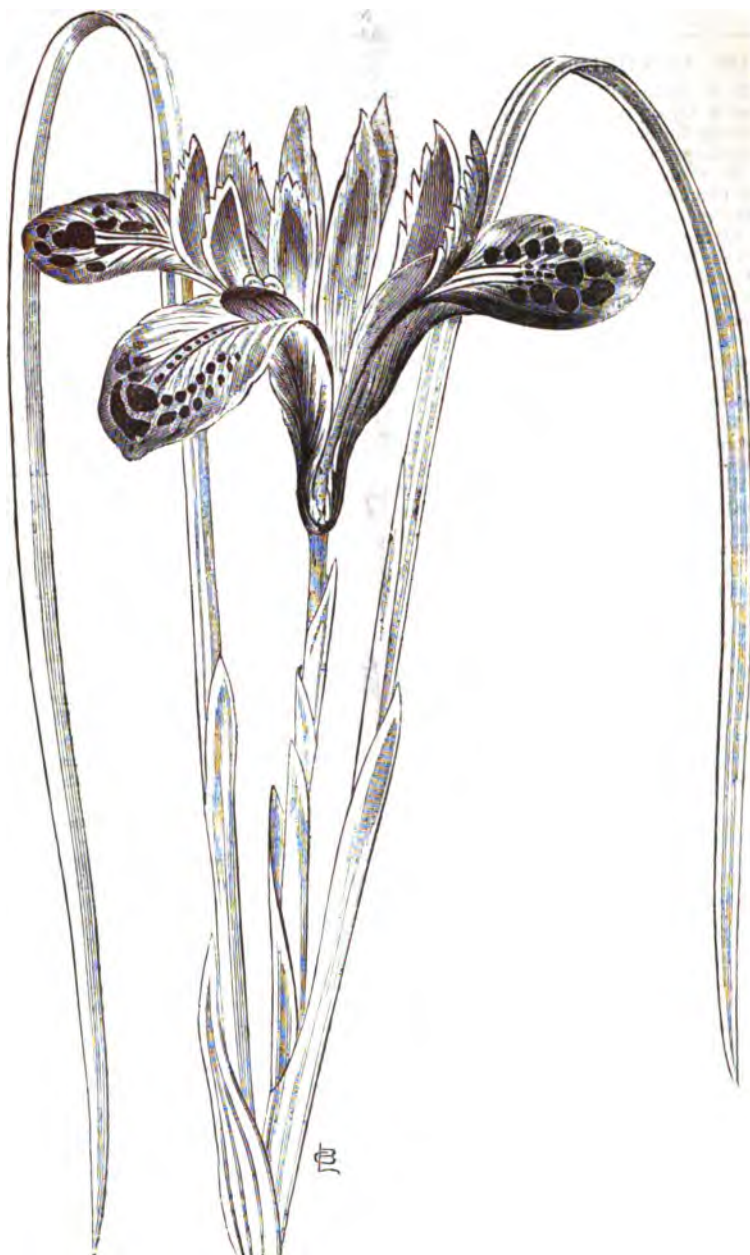
IRISES.—No. 2.

THE general beauty of these plants, and their value for rendering our gardens bright during a large portion of the year, were briefly referred to on page 141, and although much more could be written upon that subject it would be better deferred until the most useful forms for cultivation are being considered. There is so much of interest to be told in connection with Irises that it is almost difficult to make a beginning; but perhaps the most logical course would be to first glance at the botanical history of the genus as a preliminary to the discussion of its popular history. The remarks upon this portion of the subject are only intended for those whose botanical knowledge is somewhat limited, and therefore if the intelligent reader does not meet with anything surprisingly new he must not be disappointed.

The Iris gives its name to one of the largest natural orders among Monocotyledons (Iridaceæ), one that almost rivals the Orchids, the Lilies, and the Amaryllids in the number, diversity, and beauty of the species it includes. Such genera as *Gladiolus*, *Crocus*, *Ixia*, *Sparaxis*, *Tritonia*, *Tigridia*, *Watsonia*, *Babiana*, and many others render our gardens and houses gay with a multitude of brilliant-flowered species and varieties at nearly all seasons, and form most worthy allies to the genus we are describing. As the Iris is thus the typical form of the order we find the principal structural peculiarities strongly and clearly developed. Of these the most remarkable exist in the flower, which consists of a coloured corolla-like portion termed the perianth, stamens, and pistils. The perianth is composed of six divisions, the three outer being designated the "falls," as they usually droop gracefully round the flower, and the three inner divisions or standards, which are erect, alternate with the falls, of a different colour, and are smaller in size. The relative size, colours, and markings of the falls and standards are very variable in form, some of the chief distinctive characters of the sections and species. Within the perianth are the stamens, three in number, which are closely sheltered under the large arched petaloid stigmas in the centre of the flower. These stigmas are very peculiar, for they often so nearly resemble petals in colour and form that but for their position they might easily be mistaken for them. The stigmatic portion is confined to a transverse line upon their lower surfaces, and as the face of the anther is turned outwards or away from the stigma there appears to be an adaptation to prevent self-fertilisation. The next character of importance is furnished by the leaves, which are strangely folded from the midrib inwards, causing the blade to become vertical instead of horizontal, so that the sides of the leaf are really the lower surface. This may be readily seen by examining the base of the leaves in the common *Iris germanica*. The root consists of a bulb, a tuber, or a

rhizome, the majority of species having the latter form. The characters now enumerated, together with the inferior ovary, are those that chiefly mark both the genus and the order of which it is the type.

The geographical distribution of the species is wide, but entirely confined to the northern hemisphere, ranging through the temperate regions of Europe, and at high elevations in warmer climates, being found in Abyssinia, the Himalayas,



25.—XIPHION (IRIS) XIPHION.

Japan, China, and in North America, as far south as California and the Southern States. The genus is represented in the southern hemisphere by many beautiful allies—among others the Peacock Irises, *Vicusseuxia*, the *Moræas*, the *Witsenias*, the *Gladioli*, and the *Tritonias*, all natives of the Cape of Good

Hope, where, indeed, the order is very largely developed. The number of species of *Iris* known amounts to nearly a hundred, many of which have been found within comparatively recent years. The varieties are also very numerous, the majority being of garden origin; thus some nurserymen's catalogues

enumerate above two hundred forms, species, and varieties together, the latter predominating.

Several botanists have adopted certain systems of classifying the species, but the best and simplest is the one on which Mr. Baker founded his Synopsis. The distinction which separates the Xiphions from the true Irises has already been noticed—namely, the possession by the former of a bulbous rootstock, and this character is considered sufficient to separate them as different genera, although they will always be popularly regarded as Irises. The Xiphions are divided into three sections—*Euxiphion*, *Gynandria*, and *Juno*, which are distinguished from each other by the relative lengths of the falls and standards, and the cohesion of the stamens. The first section is now being illustrated, and in it the flowers have the standards nearly as long as the falls, and the stamens are not united. In the true Irises six sections are adopted, founded upon the crested or bearded condition of the falls, and these will be referred to when treating of species included in them.

The species now represented, *X. Histro*, is another of the bulbous forms, and certainly one of the most beautiful. It is nearly allied to *X. reticulatum*, but while almost equally attractive to that in colour and form it is devoid of agreeable fragrance. The ground colour of the falls is a clear lilac purple tint, and they are dotted and streaked with a deeper lilac shade, with a few yellowish markings, the standards being also of a lilac tint. The plant flowers early in the year, usually some weeks before *X. reticulatum*, and succeeds well in the south of England in warm sheltered borders of light rich soil. It is also well adapted for pot culture in frames or cool houses, and forms by no means an insignificant addition to our list of plants for decorating the conservatory shelves in the early part of the year. It is a native of Palestine, whence it was introduced to this country about sixteen years ago.—L. C.

WINTER'S WORK.

In common, I suppose, with many of my brother rosarians I have been employing part of the genial days of February in taking stock of my Rose beds and seeing what has been Winter's work. It is impossible to tell absolutely at present.

"March will search, April try;
May show if they live or die."

But quite enough is visible to cause lamentation, and at the same time cause thankfulness that things are no worse. My soil is a light loam upon gravel, on the banks of the Mole, and under the North Downs. As for the weather, a thermometer on a stand 3 feet above the grass and with a northern exposure registered 27° of frost; the mercury fell to 5° Fahr. on December 7th, which was our lowest. On December 2nd it fell to 6°, and on December 3rd to 7°; on January 27th to 9°, and on January 28th to 8°. The readings of a neighbour's thermometer in the same place having agreed with those of mine they may, I think, be taken as strictly accurate. Now as to the results of the two-months frost with extremes of 24°, 25°, 26°, and 27° below freezing.

The well-protected Hybrid Perpetuals on the Manetti have hardly suffered at all, and the unprotected Hybrid Perpetuals on Briar standards do not appear to be much hurt. I transplanted about two hundred standards and one hundred on the Manetti during the fine weather of October, and only the following at present look much injured. *Comtesse d'Oxford*, *Hippolyte Jamain*, *Marie Baumann*, *Xavier Olibo*, and *Madame Prosper Langier* are dead; *W. W. Saunders* injured, as also *Reynolds Hole*.

It will only be possible really to tell somewhat later, but every year's experience confirms my impression of the disadvantages of standards where protection is essential. On the other hand, I consider that they give the finest and the freest blooms. And now for the Teas. When it comes to these, even protecting in a hard winter proves of little avail. Of *Maréchal Niel* I find four or five killed outright; four or five *Souvenir d'un Ami* half killed; several *Lamarques* only just alive; three *Devoniensis* little better; *Rubens*, *Madame Falcot*, *Madame Willermoz*, *Souvenir d'Elise Vardon*, *Narcisse*, and *Mad. Jules Margottin* on low standards all dead. *Rêve d'Or* and *Madame Berard* have done rather better, and *Belle Lyonnaise* seems much more crippled than by last winter. Even the hardy *Homère* shows signs of severe punishment, and the half-hardy *Céline Forestier* waves gaunt blackened boughs by the side of it.

One new Rose comes out most excellently, the red *Gloire*

de Dijon. *Reine Marie Henriette*—I have three plants of this against a wall which look fresher than any except their worthy progenitor. I am glad to notice also that weak plants of *Duchess of Bedford* and *Countess of Rosebery* on parting from their fern covering appear entirely uninjured.—A. C.

LATE AUTUMN PEARS—LOUISE BONNE OF JERSEY.

No collection of autumn Pears can be in any measure complete without this well-known and highly popular variety. The specimen figured is small, having been produced by a standard tree during the cold season of 1879, and the tree was moreover growing in cold heavy soil. It is, therefore, a fair typical example of orchard-grown fruit, for which mode of

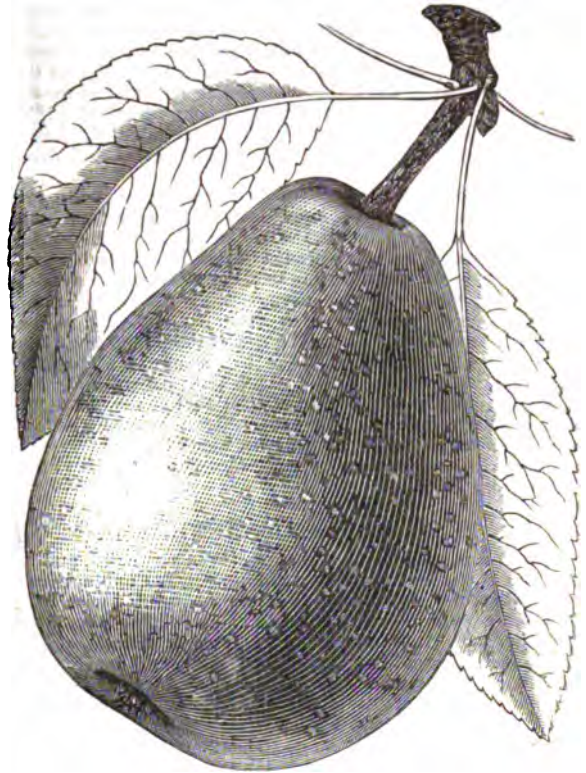


Fig. 26.—Louise Bonne of Jersey.

culture this variety is very well adapted. The fruit when produced by pyramids on the Quince stock, or by trees on walls, is much finer in appearance than that usually gathered from standards; but it is worthy of remark that the quality of medium-sized fruit grown in the open is not infrequently superior to large and highly coloured fruit grown on walls. We have often noticed this circumstance in connection with *Louise Bonne of Jersey*, *Beurré d'Amanlis*, and other autumn Pears; and the question arises whether it would not be advisable to grow such Pears more generally as espaliers, pyramids, and standards, and to retain the walls for the later varieties. Grown as standards and the branches not pruned, trees of *Louise Bonne of Jersey* become studded with fruit spurs, and, weather permitting, heavy crops follow. We have frequently seen growths of 3 feet and more in length from fruit buds as freely as Peach trees do; but had the branches been shortened a multiplicity of growths would have been the inevitable result. Moderately close pruning is essential during the first few years of a tree's growth; but after what may be termed a stout frame is established, and a sufficient number of branches are provided, it is very easy to employ the knife too freely on this and several other varieties of Pears.

Louise Bonne of Jersey was raised by M. Longueval at Avranches about 1788, and the original tree is still in existence. Like *Beurré d'Amanlis* *Louise Bonne of Jersey* has produced a striped variety, *Louise Bonne of Jersey Panachée*,

which originated as a bud sport, and is equal in quality with the normal form.

ARRANGEMENT OF PIPES FOR HEATING.

VERY useful hints on the fixing and management of horticultural boilers and pipes are given by your esteemed contributor Mr. Luckhurst in your issue of February 12th, but I think he has omitted to notice one important point. Fitters of hot-water apparatus generally insist on a continuous rise in the flow-pipe from the boiler to its extreme end, as being essential to the perfect circulation of the water. My own opinion, based on experience, is that a continuous rise is not only unnecessary but to a great extent detrimental, which I will endeavour to explain.

The circulation of water in the pipes when the fire is lighted is simply caused by the difference in weight of hot and cold water. Just as water being poured into a vessel containing oil, the latter's specific gravity being less, it will be forced up by the water to the top of the vessel; so hot water being lighter than cold water rises in the boiler, and finding an outlet at the flow pipe at the top travels through the whole extent of piping, gradually parting with its heat until it re-enters the base of the boiler by the return pipe, to be again heated and driven upwards.

Now the greatest difference in the temperatures of the water in the flow and return will be in those parts nearest the boiler, for the flow having just left the boiler will be at its highest, and the return having parted with its heat will be at its lowest. It is obvious therefore that the whole of the available rise in the flow, with the corresponding fall in the return, should be concentrated by fixing the pipes vertically, as there they will be most effective. The rest of the piping must be all set at a dead level, for what can be the use of a rise or fall at a distance from the boiler where the temperatures of the flow and return so nearly approximate that at the end there is no perceptible difference? Moreover, it will generally be found much easier to fix the piping in accordance with my suggestions, and as regards appearance more satisfactory.—GEO. DUFFIELD, *Winchmore Hill*.

BLANDFORDIA CUNNINGHAMII.

THIS plant, with many others, has been neglected, and to a number of gardeners is almost unknown. *B. Cunninghamii* is the best species of *Blandfordia* we are acquainted with, and it is worth a place in every collection of greenhouse plants however limited. It is not a large plant, and can therefore be easily accommodated. It cannot, however, be increased rapidly, as it appears slow in throwing suckers, by which means and by seeds it is propagated. It succeeds well in sand, loam, and peat, with a little charcoal intermixed. The drainage of the pots must be good, as the plant requires plenty of water while growing. It should be potted just before growth commences; and the house should be closed early in the afternoon, in order to have a warm moist atmosphere, which is very beneficial. When in flower in small pots in a dwarf state, and the flower scape is not more than a foot in length, it is well adapted for a dinner-table plant. Its coppery red pendulous flowers intermixed with yellow are very effective.—W. B.

PEACH PRUNING.

YOUR usually accurate correspondent, Mr. Luckhurst, says, page 133, he is "puzzled with a system of pruning that has lately come into vogue," and which consists "in thinning of the fruiting wood, but shortening little if any of it." The only reason he ever heard assigned for this practice, he tells us, was that shortening was unnecessary, a dictum to which he "cannot assent," and he asks, "How can anyone expect to obtain fine fruit without doing so?"—that is, cutting back. Perhaps the best answer that could be given to this question is that plenty of well-known cultivators not only expect to obtain fruit from their Peach trees without cutting back the shoots in the least, but obtain it both in quantity and quality. This of course is under glass, which Mr. Luckhurst means, I presume, for no one has ever recommended the plan of leaving the shoots of Peaches entire except when ripened thoroughly to their extremities, a thing which rarely happens outdoors in this country, if it ever does; there is no such plan in vogue under these conditions. When, therefore, your correspondent was told that cutting back was "unnecessary" he received the correct answer—it is not necessary to cut back well-ripened

Peach shoots in order to induce fertility of the highest order or to produce a well furnished tree, and more could not be said; while it is beyond all doubt that the cutting-back system, as generally practised and recommended in books, does hinder these ends, and that, too, in a very marked manner, and the question is not now one of theory, or hypothesis rather, but of well ascertained facts not likely to be shaken by any mere expression of dissent.

The extension system of training wall and trellis Peach trees under glass, or wherever the wood can be thoroughly ripened, is in principle exactly the same as the orchard system carried out intelligently—viz., thinning out the shoots only, and practised so successfully in the case of the Peach orchards in America and elsewhere, and those who condemn the one condemn the other as well. "The system that has lately come into vogue," to use your correspondent's words, is as much superior to the old restrictive system of pruning as the plan of fruiting Pine Apples in a year or eighteen months is superior to the old plan of fruiting them in three years or more. I wish it clearly to be understood, however, that this extension system can only be followed out successfully under circumstances in which the annual shoots can be matured; under no other conditions has the system been recommended in the *Journal of Horticulture* or elsewhere, hence I apprehend your correspondent and I understand each other on this point.—J. S. W.

TUBEROUS BEGONIAS AS BEDDING PLANTS.

IT is in seasons like the past that the merits of bedding-out plants are proved, and I think that few have surpassed the Tuberous Begonias. It is well known that last season after each heavy storm of rain the blooms of almost every bedding plant were nearly destroyed, whilst the Tuberous Begonias were scarcely injured, and thrived luxuriantly in the dull and damp atmosphere. There are a great number of varieties, but I shall not name any, as it is of seedlings that I am chiefly writing, as for 2s. or 3s. you may procure enough seed to raise hundreds of plants.

The present is the best time to sow the seed. The pans should be filled with equal parts of loam and leaf soil, smoothing the surface, then give a good watering, and scatter the seeds thinly on the soil, but do not cover them; place a piece of glass over each pan, and keep them in a temperature of 70°, and shade from sunshine. When the young plants are large enough to handle prick them off into pans, employing similar soil, and place them in the same temperature. When they are large enough pot them singly into small pots, and when they have made some progress repot them into 48-size pots. They should be afterwards placed in a cold frame, where they will bloom in the autumn, the best colours being selected. After flowering gradually withhold water till the foliage decays, and then store the pots away in a cool place where the tubers can be protected from frost. Start them about the first week in March, harden off, and plant out in May. After their season is over, which will be on the appearance of frost, take them up, place them in boxes, and winter as stated above.—SOUTHERN GROWER.

THE DAWN OF SPRING.

NOWHERE perhaps can the dawn of spring be discovered sooner than in the woods. On a fine day in February the scene there was perfect. The Oak trees with their ash-white trunks gleamed like silver; the Birches were suffused with the warm purplish colour that makes the spray of their branches so exquisite at this season; while the brooks, slightly swollen by the late rains, came dancing, and singing, and gleaming in the sunlight, the wavelets playing hide-and-seek under the soft and spongy banks, like very children, for gladness.

Perhaps a careless observer might walk through the woods without noticing any signs of spring, but a lover of Nature would find plenty. In the first place the Primroses are in bloom in every sheltered nook, and surely if ever a flower was welcome, if ever one brought glad tidings, it is the Primrose. But every hedge shows signs that the dawn of spring has arrived. It is true, indeed, that the grass is as dry and withered as ever, that the bracken is as brown and crisp as in December, but the branches of numberless trees show that Nature is beginning to awake from her long winter sleep. There is a suspicion, faint it may be, but still existent, of life about the tips of the branches. The Hazel shows it perhaps more plainly than any other; but the Alder and the Willow, and even the

Ash, more or less tell the same good news. But above all other signs is the message of the birds. Thrushes, blackbirds, robins, and linnets were all singing their melodious hymns of praise; and it was a real delight to wander about through the woods, drinking in that music and revelling in the signs that were apparent that spring would soon arrive.

It is very strange though, but yet is a fact, that a wood is not the place to hear the morning concert at its best. The fringes of the wood may indeed be a very good place, but the neighbourhood of a dwelling house is best of all. It surely is one of the benignant dispensations of Providence that all the most vocal of birds appear to prefer our lawns and pleasure grounds to the more retired woods. It seems as if it was ordained that they should build near our houses, in order that lovers of the concord of sweet sounds should the easier be able to revel in their melody; for in spite of boys robbing their nests, in spite of all disturbances, they choose Laurels and Conifers for their nests. But it is in the woods that the signs of the dawn of spring are most apparent.

The late Mortimer Collins, who was devotedly fond of birds, used to protect them in every possible way, and they became so tame near his house in Maidenhead Thicket that a blackbird would allow him to stroke her as she sat on the nest, and an owl would come at his call and perch on his shoulder. But how difficult it is to protect birds! No one is such an enemy of the birds as he who ought to be their greatest friend—the gardener. I know that some birds do harm to fruit trees, such as the chaffinch and bullfinch, but I say that the little fruit the thrush eats is a mere nothing when compared to the immense benefit he confers upon us in spring and autumn with his lovely singing.

We have no nightingales with us—I wish we had; but the thrushes are second to none. The other day a very singular and interesting event took place. Towards evening a hawk was seen approaching the wood in most hurried flight. There was none of the majestic flying so peculiar to this bird, but a hurried darting to and fro, and fear seemed to be stamped on every feather. The cause was soon evident. He was pursued by two crows, and never did a poor little bird more cunningly try to escape the clutches of his great enemy than did the latter try to hide away from the crows. He kept darting this way and that, diving down wherever he saw an open spot, but avoiding all trees lest he should ruffle his feathers; but he is pursued all the time by the crows, till at last things become so desperate that he sees he must take some special means of safety or all will be up with him, so he suddenly darts down into some long reed grass and hides himself like a poor bunny fleeing from a stoat. The crows wheel round the spot, but in vain; they cannot get at him. By-and-by they fly away, and then the hawk comes timidly out and takes his departure.

One of the signs of the severity of the winter with us is the scarcity of birds and rabbits. The other day when going to the wood I saw a large mistle thrush which was only able to fly about a yard. I and my woodman caught it, and it was so weak from hunger that it lay quite passively in my hand. I took it home and fed it with bread and milk, and then let it go. Perhaps it will sing on my lawn for the rest of the season, for the frost broke up the day after. But there are next to no rabbits. The last day of January two gentlemen shot six woodcocks in the wood and only one rabbit, and I have seen no hares at all. It is not so much the cold, I believe, as the wet summer that has caused this mortality. But now there is every appearance of a fine season. Vegetation has been kept well back by the cold, and when plants begin to grow, won't they just go ahead?

Perhaps, however, one of the most grateful signs of the dawn of spring is the growing day. In the woods now you can stroll about or work till six, and can see to read if you will at seven in the morning. And as the sun gets higher in the heavens the winter prospect is flushed with such marvellous golden light, that you appear to be gazing on trees of silver set in a frame of gold.—WYLD SAVAGE.

NOTES ON VILLA AND SUBURBAN GARDENING.

LAWNS.—The late severe frosts have had the effect of loosening the turf, and in order to remove inequalities and to fix the roots of the grasses firmly in the soil it is necessary to well roll it occasionally. Where a roller is not to hand and the turf of limited extent, it may be well trodden and finished off with the back of the spade. Cricket grounds are sometimes apparently so much improved by the trampling incidental to football matches as to

suggest the idea that trampling is really more efficacious than rolling. Where moss abounds on the turf it is very advisable to run an iron rake over it two or three times in different directions, and after being swept to give a good dressing of road grit and soot lightly raked in. Falling road grit good garden soil may be substituted. Sweeping will help to work in the dressing and also to eradicate the moss. Mowing machines encourage moss; the older plan of mowing with a scythe and afterwards sweeping has a contrary effect.

FORMING FRESH TURF.—The present is a good time for making new lawns, whether turf is used or the less expensive and eventually equally efficacious plan of sowing seed is adopted. In either instance it is very necessary to make the ground both solid and even prior to being covered—not merely levelled, but deeply dug and levelled as the process goes on, or otherwise it will sink unequally when rolled. Stir up the surface with a rake previously to being either covered with turf or sown with seeds. The former should be well beaten as laid down, and the latter lightly covered with fine soil.

RENOVATING LAWNS.—Thin turf may be improved by a sowing of seeds. Well rake the turf previous to sowing, and afterwards cover with fine soil. Somewhat shady places, which are often very bare of turf, may be made to look green by sowing special mixtures of seed for these places. The quantities to be sown and the kinds required, whether for new formations or renovating, will be best left to competent seedsmen, all that is necessary being to state the extent of space to be covered or improved, and the kind of soil prevalent.

CLIMBERS.

These should be thinned out and properly trained, especially those on walls and dwelling houses; unless this is strictly attended to much of their beauty is lost, and instead of being attractive and ornamental they will, if allowed to grow at random, soon become very unsightly. Where this bad state of affairs exists it is very advisable to cut them down to near the ground, and in most instances they will start again, and the young growth thus obtained will be found very superior.

CLEMATIS.—Those of the Jackmanni type are the most free and continuous in flowering, but there are many others that bear flowers of superior form on the current year's growth, although not quite so profusely. The flowering growth of these and also those of the Jackmanni type should be cut back to near its last starting point, and where by this time wood buds are showing. Many of the early-flowering varieties are also very fine, and these bloom on the growth made the previous year. These should be thinned out, and the old flowering wood taken out as much as possible to induce vigorous growth. Now is a good time to plant Clematis. They are usually sold in pots, and when they are planted the ball should be opened and the roots spread out evenly on the soil. This should be both rich and of good depth, as Clematises are of strong growth. Young plants that have been recently placed out should be cut down to near the ground, one or two strong shoots being preferable to several of a more weakly nature. A good selection of early-flowering varieties comprises Lady Lonsborough, Fair Rosamond, Albert Victor, Miss Bateman, and Mrs. Baker; and of later varieties, Jackmanni, Rubella Langhinsos, Magnifica, Lady C. Neville, and Mrs. J. Bateman.

JASMINE NUDIFLORUM.—This beautiful yellow Jasmine is flowering freely at the present time, and for this reason is very valuable. Lay in strong young growth where required, and from these will break a number of branchlets for the following winter's display. Where well established all side shoots should be cut in immediately after flowering. Old plants cut down start again very readily.

FORSTYTHIA VIRIDISSIMA.—This is not unlike and receives the same treatment as the last mentioned climber, but is much less common and scarcely so hardy. It, however, requires no protection in the south, and produces its yellow blossoms a month later than the Jasmine. It deserves to be more generally grown.

PRUS JAPONICA.—Both this and the white variety (alba) are very neat slow-growing plants, producing beautiful bunches of bloom early in the spring. They should be treated much the same as a Pear—i.e., the leaders should be laid in, and all side branches spurred in to induce the formation of flowering sprays. The finest clusters are usually to be seen on the young growth, and for this reason old straggling plants should either be cut in or down to near the ground.

ORATEGUS PYRACANTHA.—The large clusters of bright red berries which well-grown plants of this Hawthorn produce, and which remain on during the dull winter months, render it a very suitable plant for covering walls. Old straggling plants are, however, comparatively worthless, and the sooner they are cut down the better, as it is the young vigorous growth that is sometimes seen literally covered with berries. Cut all side shoots in to near the main stems, and lay in the leaders.

ROSES.—From the climbing Roses on walls the earliest blooms are usually obtained, and if the plants are properly pruned and trained they are almost invaluable. Lay in strong leaders where required, but not too thickly, and cut back the weak shoots to induce stronger growth. All side shoots should be cut-in to near

the main stems. *Maréchal Niel*, however, requires different treatment, as it flowers principally on the long strong growth of the previous season. A few shoots, therefore, should be laid in and others cut hard back to induce the formation of flowering growths for the next season. It is a good plan to have two plants of this variety and cut one back each alternate year. Long strong shoots of *Gloire de Dijon* also give the best blooms.

AMPELOPIS.—*Veitch's* small Virginian Creeper, which is much the prettiest, requires but little attention beyond cutting off any straggling shoots; but the larger varieties require to be supported. The leaders should be laid in if required, and all side branches cut in to the main stems.

WISTARIA SINENSIS.—This should be trained thinly, the leaders laid in if wanted, and all side shoots spurred in.

CHIMONANTHUS FRAGRANS.—The highly fragrant although insignificant flowers of this species, usually produced at midwinter, are much appreciated, and for this reason ought to be more generally grown. The leaders should be laid in, and all strong side branches cut in, the bloom being usually produced on the spray.

WORK FOR THE WEEK.

HARDY FRUIT GARDEN.

THE planting of fruit trees should be pushed forward and brought to a close as soon as possible, and pruning, dressing, maling, or tying fruit trees against walls should also be completed. Where grafting is contemplated scions of the required kinds may now be taken off, and the ends placed in the ground in a slanting position, so as to retard them until the stocks have made a start. In selecting scions choose moderately strong wood of last season's growth. A strict examination should be made of standard and other description of Apple and Pear trees, and if they are unhealthy, producing inferior and uncertain crops of fruit, it will be advisable to head them down and graft them with varieties that are found to succeed. This will be found more successful than planting young trees, except in the case of old worn-out much debilitated trees. Where spring planting of Strawberries is contemplated the ground should be prepared by well manuring and trenching. Good well-rooted runners of last year being at command, it is better to defer planting until growth commences, and then lift the plants with a ball of earth to each so as to cause as little check as possible.

FRUIT HOUSES.

Vines.—Late Vines require a long season of growth, as to insure the Grapes keeping well they should be fully ripe by the middle or end of September. To effect this the Vines should be started early—the end of February or the beginning of March. The inside border should be well supplied with water at a temperature of 85° to 90°, and if there are fermenting materials at command a bed may be made upon the border, which will lessen the necessity for fire heat and conduce to a good regular break. The rods should be sprinkled two or three times a day, maintaining a night temperature of 50° to 55°, and 65° in the daytime, by which means the Vines will start freely and there will be every chance of the Grapes becoming thoroughly ripe by September, even such varieties as *Gros Colman* (the finest late Grape out), and *Gros Guillaume*, which require a month to six weeks more time to ripen thoroughly than *Lady Downe's* and others. As a general rule all houses of late Grapes should be started at the end of next month; hence they should be prepared as soon as possible, washing the woodwork, dressing the Vines, removing the loose surface soil from the border, and supplying with fresh soil. The weather has not been of late favourable for early forcing, cold winds and rain and snow prevailing. Outside borders will require to be kept covered up and the material renewed as required. In early forcing, especially for Muscats, a well-drained inside border which can be well mulched and nourished with tepid liquid manure is a decided advantage. Muscats in flower should have a night temperature of 65° to 70°, with 10° to 15° rise by day, closing in bright weather at 80°. Artificial impregnation should be practised with shy-setting varieties, particularly Muscats, which are often deficient of pollen, or if plentiful a better set is secured by fertilising every bunch carefully with *Hamburg* pollen than when their own is employed. Vines in flower set best when the atmospheric moisture is not excessive. An overmoist or a dry atmosphere should be equally avoided, and ventilate whenever a favourable opportunity offers. Close attention will be necessary to stopping, tying, and thinning in the early house, removing superfluous bunches. Early pot Vines must sustain no check through dryness. Top-dress the surface of the soil with rich turfy loam and decayed manure in about equal parts, placing rims of zinc or lead 3 to 4 inches deep round the tops of the pots, or if the pots are plunged to the rim in fermenting material strips of turf about that thickness should be laid so as to form the necessary dish. In order to encourage the swelling of the berries keep the laterals below the bunches somewhat closely stopped, allowing more liberty to those above them, but avoid overcrowding the trellis with foliage that cannot have full exposure to light. Vine eyes inserted as advised in a former calendar will

have rooted, and if in small pots they should be shifted into a larger size as soon as the roots reach the sides, standing the pots on shelves over hot-water pipes in preference to plunging them in bottom heat; or if the eyes were inserted in pots or pans several together they may be potted-off in small pots singly, plunged in bottom heat to ensure speedy root-action, and when the roots reach the sides transferring the plants to 6-inch pots. Fly the syringes well amongst them, and stop those intended for fruiting at the first joint of the laterals; but those intended for planting-out this season, whether grown in turves or pots, should be allowed to retain all the growth made.

Cucumbers.—Although it is the reverse of good practice to stop the young growths very much during the dull cold days of winter, now that the days are brighter as well as longer more stopping must be done, pinching the growths at one or two joints beyond the fruit. Plants showing symptoms of exhaustion should have the surface soil removed without unduly injuring the roots, and after a good watering with liquid manure top-dress with rich turfy loam in a rather lumpy condition. The supply of atmospheric moisture will need to be increased in proportion to the increase of solar light and heat, the evaporation troughs being kept regularly filled with liquid manure as a check upon red spider and mite-raging to the plants, damping the house in the morning, and the plants in the early part of bright afternoons. If red spider appears remove as many of the worst leaves as can be spared, and brush the pipes over thinly with a wash formed of flowers of sulphur and skim milk. For thrips treat similarly as regards the leaves, and fumigate moderately on two or three consecutive calm evenings. Mildew may be destroyed by dusting flowers of sulphur freely over the infested parts. Aphides are best subdued by fumigation, and canker at the collar by rubbing quicklime into the affected part until the ulcer is removed and dried. Still maintain the night temperature at 65° to 70°, and 70° to 75° by day artificially, with an advance from sun heat to 85°, closing early with sun heat at 80° or 85°. Liquid manure in a weak state may now be applied once or twice a week. Do not allow the fruits to hang too long, they only weaken the plants, and so do male blossoms, which should be removed. The fruit will keep fresh for several days when removed from the plant if the stems are inserted in saucers with a little water. In pits and frames carry out former instructions, and on all favourable occasions allow the escape of rank heat and steam without admitting cold air.

Melons.—The earliest plants are growing fast, and should be planted out at once. It is of little use attempting to grow early Melons except in a low, light, well ventilated house with sufficient hot water pipes for affording top and bottom heat without having to heat them very highly. The best form of Melon house is a span, about 10 feet wide inside, and with the roof at an angle of about 35°. Such a house will admit of a 3-feet pathway down the centre and a bed on each side. Two rows of 4-inch pipes will be required through each bed for bottom heat—one on each side the path on the curb, and one running round the house by the side walls, which will tend to the better diffusion of the heat than placing them all together, as is too often practised. The pipes in the bed may be covered with slate or stone slabs, and on those 8 inches of rubble for drainage, and then a thin layer of turves grass side downwards; or the pipes in the bed may be surrounded with rubble and brought up over the pipes about 6 inches, and over these a layer of turves grass side downwards. The soil should be placed in ridges the length of the bed, or hillocks may be formed; and in either they should be about a foot over at top, 10 to 12 inches depth of soil, and that should be well rammed down. When the soil is warmed through turn out a plant in each hillock, or if ridges be formed at 30 to 36 inches apart, firming the soil well about the ball, but being very careful not to injure the stem. The plants being watered a few hours prior to planting out there will not be any need of water at planting. A ring of soot and lime should be drawn round the stem of each to guard them against slugs. The walls, paths, &c., should be damped in the morning, and a light syringing overhead in the early part of the afternoon of bright days, damping down again before nightfall. A temperature of 65° to 70° at night, and 70° to 75° by day, advancing to 80° or 85° with sun and moderate ventilation, closing at 80°, bottom 80° to 85°. Sow more seeds for successional planting in houses, pits, or frames.

PLANT HOUSES.

Orchids.—Push forward the potting and top-dressing of all East Indian plants requiring it, and now that the flower spikes are growing rapidly keep a strict look-out for slugs, cockroaches, and crickets, employing some beetle poison. Woodlice are very destructive to the young roots, and should be tempted with potato baits with the middle hollowed out placed on the surface of the pots, examining them twice a day. If badly infested allow the potting material to become a little dry, and then immerse them in a tub of guano water, 1 oz. to a gallon of water, and the water covering the surface of the pots or baskets the pests will come to the top, and may readily be caught. *Anectochilus* will now require repotting, removing all the material from the roots, and repot them in a mixture of chopped sphagnum, fibrous peat, and

silver sand. Good drainage is essential, potting them moderately firm. When grown in a frame or under bell-glasses the lights or glasses should always be slightly tilted, and the glasses should be removed every morning and wiped dry, allowing them to remain off a short time each day when the house is charged with moisture. Watering must be done with great care. They must be kept moist, but should never be saturated, or they will soon perish. They may be increased by cutting into pieces, leaving three or four eyes to each, potting in sphagnum, peat, and sand, keeping them close until they begin to grow, and water sparingly. The shadings should at once be fixed in their places, although it may happen that they may not be required; yet it is best to be on the safe side, as the sun heat in the middle of the day will be too powerful for some *Orobanch*, the shading being needed quite as much to obviate the necessity of admitting cool air as to prevent scorching. The shading on the cool house, Cattleys, and intermediate or Mexican house should be so arranged that when down they will be about 4 inches above the glass, which may be done by strips of wood fixed above the roof from top to bottom, which will admit of light and air passing up between the canvas and glass. On the East Indian house the canvas may touch the glass. Gradually increase the ventilation when the air is calm and mild, but avoid cold currents, which are very disastrous, especially after the closeness they have endured for many weeks past.

TO CORRESPONDENTS.

* * All correspondence should be directed either to "The Editors" or to "The Publisher." Letters addressed to Mr. Johnson or Dr. Hogg often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

PRUNING ROSES IN POTS (E. C.).—Shorten the growths to the best buds that are only just commencing to grow. The long young growths to which you refer will not flower, and must be removed.

WILLIAMS' BON CHRISTIEN PEAR (J. M. A.).—Trees may be had of any nurseryman of repute who devotes attention to fruit trees. We never saw a collection of fruit trees grown for sale where this valuable Pear was not to be had, except when the stock of it was "sold out."

HARES EATING CABBAGES (F. J. C.).—We know of no mode of keeping the hares from Cabbages and other green crops except by surrounding the crops with wire netting. The white yarn to which you refer is of no use for the purpose.

ARAUCARIA UNHEALTHY (W. H. R.).—The soil probably requires draining; and if the surface soil is removed from the roots and fresh compost applied more healthy root-action would be promoted, and the specimen would probably regain its health.

INDIAN PLANT (A Constant Reader).—The plant of which you sent a portion of the pod is a species of *Cassia*, and belongs to the order Leguminosae. The seeds should be sown in light soil in heat, and no doubt you will succeed in raising some plants; these will require a stove temperature, and light, rich, well-drained soil.

COTTAGERS' HORTICULTURAL SHOWS (E. H. A.).—You cannot do better than read what is published on the subject in Nos. 940, 941, and 942 of vol. XXIV. of the *Journal of Horticulture*. If you have not access to these numbers they can be had from our office for 3d. each, on sending stamps to the publisher and quoting the numbers required.

PRINULA PURPUREA (Gus.).—The variety was first figured by us on page 37b, vol. XXIV. It is very beautiful, and instead of the engraving and description in Mr. Cannell's "Floral Guide" exaggerating the beauty of the plant they really do not do full justice to it. The heads of flowers are very fine, and the colour is extremely rich.

CHOICE STRAWBERRIES (J. D.).—*Pinness (Laxton)* is one of the best new early varieties. *Belle du Midi* is bright in colour and early; Dr. Moore, *Barry Favourite*, *La Grosse Sucrée*, and *Vicomtesse Hortart de Thury* would also be likely to suit you; as would each later varieties as Sir Joseph Paxton, *Traveller*, *James Veitch*, *Unser Fritz*, *Lorford Hall Seedling*, and *Anguste Mousse*, all of which are good in colour and travel well.

HEATING GREENHOUSES (A Subscriber).—According to your letter your small cylindrical boiler has to work 360 feet of 3-inch piping, which is fully too much. There may also be some faulty arrangement of the pipes, or the return pipe would be more than "just warm." Have you an air pipe in the highest point of the hot-water pipes, and are there any sudden dips in the pipes? The former is essential, the latter often fatal to free circulation.

SCALES ON VINES (J. R.).—The insects sent are fine specimens of the large brown scale, which the owner you commend the better. Dissolve 4 oz. of soft soap in a gallon of water, and with this scrub the rods thoroughly with a brush, employing the solution as hot as the hand can be borne in it. Wash also the woodwork and every portion of the house, and see that no plants that are placed in the vinery are infested with the scale.

ABNORMAL GROWTH OF JERUSALEM ARTICHOKES (A. H., Caterham).—The growth of the tubers is very remarkable, one of them being 14 inches in length and almost as regular as a Cucumber. Tubers are really underground stems, but they are rarely seen so stem-like as those you have sent. Highly manured soil and the heavy rainfall of last summer and autumn have contributed to the singular extension of the tubers.

CUTTING BACK STRAGGLING CAMELLIAS (Puddle).—You may cut the plants in as closely as you like, and they will break into growth freely if encouraged by a moist atmosphere with a temperature of 55° at night, and 10° to 15° more by day, and shading from bright sun. We should not, however, cut in so closely as within 2 inches of the main stem, but only sufficiently to form the foundation of a good specimen.

OTEPENS ALVERNIFOLIA (Idem).—This plant often dies down in the winter when kept in a cool house and grows again in the spring. When kept in stove heat the growth remains more or less active during the winter. It is a very accommodating plant, and you may grow it either in a stove or

greenhouse, but an intermediate house is perhaps the most suitable position for it.

TEMPERATURE FOR CUCUMBERS (Idem).—The night temperature should be 65° to 70°, and 70° to 75° by day from five heat, with an advance to 80° or 85° from sun heat, ventilating from 75°, and closing at 80° with sun heat. Particulars of treatment you will find from time to time given in "Work for the Week." Strong plants being placed out you should be able to cut fruit early in April; but much depends upon the size of the plants, and early fruiting is not desirable, as it weakens them, therefore allow only moderate fruiting at first. You cannot do better than make the Vine border as you propose.

FUMIGATING GREENHOUSE (E. H. R.).—There is no other mode of fumigating to prevent injury occurring to the fronds of Ferns than to fumigate lightly during these consecutive nights: by this means, repeated every month or oftener if necessary, you may destroy the thrips as they hatch and not injure the Ferns. A dense volume of tobacco smoke is injurious to many plants besides Ferns. The foliage of the plants must be dry when the fumigating is done.

MICE EATING PEAS (J. G.).—If the Peas are sown cover the rows with sharp ashes an inch thick and a foot wide. Set also baited traps, and you may catch many of the mice. If you slightly sprinkle the ashes with paraffin the mice will be the less likely to interfere with them. Some growers moisten the Peas and dust them with red lead before sowing, and others dress them with paraffin to prevent the depredations of mice. Both plans are good. The book sent will perhaps answer your requirements.

MUSHROOMS EATEN (Mrs. H.).—The most likely devourers of the young Mushrooms are slugs or woodlice, which will be encouraged by the unnecessary covering of straw. Remove the straw and examine the bed after dark with a lantern, when the depredators will be at work and may be destroyed. Some boiled potatoes wrapped loosely in a little hay may be placed about the bed, and they should be examined every morning, shaking the woodlice into a bucket of boiling water.

APPLYING GAS LIME (E. F. B.).—We have not proved that gas lime is a remedy for the Gooseberry caterpillar, but it is inimical to grub life generally. If fresh from the gasworks it must be applied with care at this season of the year, a light sprinkling only being safe. A large handful will be sufficient to spread on each square yard of the surface soil under the Gooseberry bushes, and the dressing might be repeated when they are bursting into leaf.

BENGAL ROSES (A. Stedon).—The terms Bengal and China as applied to Roses are synonymous, therefore Bengal Roses are China Roses, the varieties being derived from *Rosa indica*. They are not so hardy as Hybrid Persians and Bourbons, but are worthy of culture and protection, as they give a long continuance of blooms, and embrace some of the richest colours to be found amongst Roses, as is instanced by *Cramoisi Supérieure*, *Engée Beaumais*, and *Fabvier*. The best white or nearly white is *Mrs. Bosanquet*.

TREATMENT OF AMERICAN TUBEROSES (Glandorpden Park).—Pot them in turfy loam with a fifth of well-decayed manure and about an eighth of sharp sand. The soil should be moderately moist and the pots should be plunged in bottom heat, no water being given until the plants start into growth, when it must be supplied moderately at first, increasing the supply with the growth; 6 or 7-inch pots will be large enough. The tubers should be potted now, and after they start into growth remove them to a light position in a house with a temperature of 60° to 65° by artificial means. If likely to be too early remove them to a greenhouse.

MAN REQUIRED FOR FORMING ESTABLISHMENT (F. R., South Wales).—To manage the place satisfactorily you will require four efficient men in addition to a working gardener; but as you are not more descriptive of the other houses than those specified another man may be necessary for them, it being always more profitable to have plenty than too little manual power. It must be remembered, too, that when the Peach trees cover the trellises and the Vines the roof, that much more labour will be required in summer dressing and training, also in thinning and packing fruit, than is requisite when the Vines and trees are young.

MEANING OF SCHEDULE (Blacksmith).—According to the strict meaning of the word "distinct" in the class to which you refer you can even exhibit twelve distinct species or varieties of any genus of plants and not be disqualified, but we do not advise you to do so, as variety always "weighs" with the Judges when awarding the prizes. If the framers of the schedule meant twelve distinct genera they ought to have said so, and they cannot expect exhibitors to suffer because of doubt and ambiguity of the terms they employ. We have repeatedly stated that the wording of schedules cannot be too clear and explicit. Write to the Secretary of the Show and ask what meaning he attaches to the word "distinct."

VARIATED IVIES (W. H.).—*Hedera canariensis* var. *latifolia* maculata is the strongest grower of all. *H. marginata* grandis, *H. marginata* major, and *H. elegantissima* are also free growers and suitable for covering a wall. The large-growing Virginian Creeper (*Ampelopsis hederacea*) does not adhere to walls, but must be secured to them in some way if a close surface is desired, but *A. Viticella* clings with great tenacity. We know of no other hardy climber that adheres to the walls, but probably *Ficus repens*, which is a native of India, would prove hardy with you. We have seen it growing on the outside of the wall of a plant house in Mr. Kinghorn's nursery at Richmond, and also growing freely in the garden at Desdemona. It clings to walls as closely as Ivy, and a plant of it is worth trying in your garden.

ROOT PLANTS NOT FLOWERING (W. H. C.).—Richness of the soil is the cause of the exuberant growth and sparsity of flowers on the plants. To prune them severely and without checking the roots would only aggravate the evil. Probably your best plan would be to prune the plants rather closely, and at the same time dig round them with a spade, cutting off all the roots within about 2 feet from the stems, and then confine the roots with brickwork, the bricks being laid in cement. Your object must be to induce moderate growth and to have that growth matured, you may then expect the plants to flower. It will be of advantage to the Vines, too, to prevent the roots of the Pimmango and *Tacoma* permeating the Vine border. If the latter plant has been raised from seed it will not flower nearly so freely as if it had been raised from a cutting.

PROPAGATING BOUYARDIAS (Yorkshire).—The old plants should be pruned rather closely if they are tall and straggling, then place them in heat and they will soon start into growth. The young shoots should be then taken off, if with a small portion of the old wood attached so much the better, and inserted in sandy soil over a hotbed where they will soon strike,

and may be potted singly into small 60-size pots, shifting them as growth advances into pots of a larger size. Both the young and old plants should be in cool light pits or frames during the summer, removing them to a warmer pit in the autumn, and afterwards into heat to bring them into flower early. In the south of England they are often grown outdoors in the summer with advantage. The Indiarubber Plant does not require much root room except when in a young vigorous growing state. It may be potted at almost any time, but early in spring is perhaps the most suitable.

PARAFFIN AS A GRUB DESTROYER (J. B.).—Paraffin will destroy most kinds of grubs and insects, but it must not be applied too strong, or it will destroy the crops and plants too. We have not had experience of its effects on the Carrot crop in destroying the maggot, but it has been tried by cultivators with varying results. It may be applied to the ground before the seed is sown at the strength of a quarter of a pint to a gallon of water, and the young Carrots may be watered with it immediately after they are thinned, not, however, exceeding at that time an ordinary wineglassful of the oil to a gallon of water, or the crop will be endangered. In gardens where the Carrot grub is very troublesome we know of no mode of securing a crop of clean roots so effectual as by sowing seed of the Early Horn varieties early in July. Seed sown at that time produce Carrots quite large enough for culinary purposes, and they are rarely attacked by the maggot.

TREES FOR BORDER (Correspondent).—From what we gather from your letter we presume your ultimate object is to have one row of trees that will afford some shelter and at the same time have an ornamental effect. We do not think that a mixed row of deciduous trees and Conifers would be satisfactory. If you decide on having Conifers we should choose *Picea Nordmanniana*, which is very hardy, grows freely, and a row of the length you name would have a very striking appearance. But before deciding you must satisfy yourself that Conifers thrive well in your soil and district. If you prefer deciduous trees a row planted with the Scarlet Oak and *Acer rubrum* would have a rich appearance; for one row only Limes, the red-twigged variety, would produce a quick and good effect. As nursing trees we advise you to rely chiefly on Larch, for the young trees can not only be cut out without compunction but are useful for Pea sticks when "sided up," stakes, rustic work, and various other purposes; whereas when choicer trees are planted we have often observed that there is a reluctance to remove them at the proper time, and the permanent trees are consequently injured. It is important if you decide on planting Conifers that the soil is not stagnant; if there is a suspicion of this have the site drained, and whatever you plant you will find the advantage of thoroughly breaking up the soil to a depth of 18 inches or 2 feet, and keeping it clear of weeds after the trees are planted. We should not plant a great number of choice trees, shrubs and Conifers for a temporary purpose unless you have other positions to which you could remove them in a few years; in this case your border might in the meantime be formed into an useful and attractive nursery.

ANNUALS FOR BEDDING (S. T. J.).—Much depends on the nature of the soil and district as to whether annuals can be depended on for yielding a continuous display of flowers. In a thin soil and dry locality the charming annual *Nemophila insignis* is of short duration, whereas in cooler localities where the rainfall is greater it flowers during the entire season. As a rule hardy annuals are not well adapted for bedding purposes in summer. They are beautiful for a time, but often fail, when extremely hot weather sets in, at a time when they are most wanted; yet with deep and rich soil, timely thinning of the plants, and picking off the flowers as they decay to prevent seed forming, beds may be rendered attractive. But there are annuals that are not flowering plants, and flowering plants that may be raised from seed that are not annuals, that you might employ for filling your beds. Subtropical plants, such as *Zea japonica*, *Ricinus*, *Gibsoni* and sanguineous, *Wigandias*, *Eucalyptus globulus* in a young state; *Cannabis gigantea*, or Giant Hemp, and *Melanthus major* are very ornamental for certain beds and positions. They are all raised from seed sown under glass and the plants duly prepared for planting. Dwarfier plants similarly raised which are effective by their foliage are the Golden Feather *Pyrethrum*, *Perilla nankinensis*, *Chamaepence dioantha*, and *Dell's Beet*. Of flowering plants *Petunias*, especially the striped and barred varieties, make beautiful and lasting beds, the seed to be sown under glass and the plants grown on and prepared for planting out. Equally suitable is *Phlox Drummondii* raised in the same way. *Verbena venosa* sown at once and strong plants provided by May will flower until severe frost occurs; it makes an effective purple bed. The ordinary florists' varieties of *Verbenas* are readily raised from seed and flower freely in the autumn (the plants growing more freely than those from cuttings) and make good mixed beds. For large beds *Zinnias* are extremely gay. The seed should be sown under glass, but not too early, or the plants will be "drawn." *Ageratums*, both tall and dwarf, may be raised in the same manner as *Petunias*, and they will flower freely the first season. Stocks may be raised the same as *Zinnias*; they make gay and fragrant beds, but do not continue entirely through the season. *Asters* make gorgeous autumnal beds. The seed is usually better sown thinly in very rich light soil under handlights about the first week in May than sown in pots placed in heated structures at an earlier date. *Tagetes signata pumila* raised the same as Stocks makes a close yellow bed of long continuance. Of hardy annuals not many flower for a great length of time if the summer proves hot and dry. The best for bedding is *Saponaria calabrica*, which makes the most charming pink beds imaginable. The white variety also makes pretty beds or edgings. Sown in March in the beds, and thin out the plants so that they can assume a branching habit. For a rich blue or violet bed no annual equals *Convolvulus minor tricolor*. Sow and treat the same as advised for the *Saponaria*. By picking off decayed flowers and applying liquid manure as required the plants flower throughout the season. For producing scarlet, crimson, yellow and buff beds grow the different varieties of the Tom Thumb section of *Tropaeolum*, often misnamed *Nasturtium*. The seed may be sown in the beds or in rich soil in the reserve garden and the seedlings transplanted. *Godetia Lady Albemarle* makes a singularly rich bed, but does not always continue so long as is desired. In some of the beds you might plant such gay and free-growing *Gladioluses* as *Bremholeynensis* and some others which would grow above such plants as dwarf Stocks and other annuals, and would commence flowering when the annuals were fading. Then for small beds *Lobelias* of the blue and mottled varieties are very suitable. With such plants as we have named, properly raised and well cultivated, you may render your garden gay in the manner which you appear to desire. It is of great importance, however, to remember that when annuals are grown so thickly that they cannot branch and spread, their beauty is necessarily of short duration; for when each plant has only room, as is often the case, to produce one stem, the flowers at the summit cannot be succeeded by others to continue the display.

NAME OF FRUIT (J. R. C.).—We regret that we are unable to identify the Apple.

NAMES OF PLANTS (B. E.).—It is impossible to name Conifers from such fragmentary specimens without a knowledge of the habits of the shrub, or without cones or other developed characteristics leading to identification. Neither do we undertake to name more than six specimens at one time. This rule has been frequently stated, and we are compelled to adhere to it. (W. Keen).—The specimen you sent was quite insufficient to enable us to identify the plant, but if you will give a few more particulars concerning the habit of the plant, the form of the flowers, and the area to which it is applied in Spain, we will endeavour to determine its name. (F. W.).—1, *Salvia gesneriflora*; 2, *Begonia manicata*. (G. F., Hants).—1, *Valeriana viridiflora*; 2 is a *Verbascum*, but the specimen was too withered to determine the species.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

STEAM CULTURE.

THIS subject is of great importance to the home farmer, for although it is in only a few cases where the quantity of arable land is sufficient to justify so large an outlay as the purchase of a set of steam-cultivating tackle, yet there are few situations in which steam power cannot be hired when it may be required. As a rule we may calculate that home farms usually consist of a large portion of grass or park land as compared with the arable; but the proportion varies so much that a rule cannot be laid down as to the advantage of employing steam power by hiring. We think that occasions will often occur to make it desirable to hire steam power at certain times of the year, even where the acreage of cultivated land may range between 80 and 200 acres. The horses may be diminished in number upon the occupation with some advantage when steam power can be obtained on hire with a moderate degree of certainty at the different periods of the year.

On very few estates of noblemen and gentlemen is the home farmer required to manage large tracts of arable land; it does, however, sometimes happen that large farms, say from 700 acres up to 1000 acres, come into occupation from not being readily let, and it is only in such cases that the outlay for the purchase of engines and steam-cultivating tackle can be considered judicious. Let us therefore consider the matter as decided on that steam power shall be purchased for cultivating the farm as far as it can be made available, for it must be understood that under ordinary circumstances a considerable number of farm horses will be required independent of the steam power.

We will first consider the cost of single-engine sets of tackle on the roundabout system, the prices for which will vary from £600 to about £750, in some cases even more, the cost following the power of the engine to a great extent, as in the case of Messrs. Howard, and of Burford & Perkins; whilst for double-engine sets on the direct system the prices will range from the six-horse-power tackle of Messrs. Fowler, costing about £1100, to their thirty-horse-power double set costing about £3000. As, however, each maker generally contributes improvements in various parts of their machinery nearly every year the prices will to some extent vary, and those we have named merely as maximum and minimum prices will be sufficient to show how small or how large a cost it is possible for any purchaser to extend the outlay. The sets of tackle are known chiefly by name, as the roundabouts and the direct. The first-named is the oldest that has come into extensive use, and there are roundabout sets made by Howard, Fowler, and Burford & Perkins, each being an improvement of the original system introduced first by Mr. Smith of Woolston. The principal recommendation of the roundabout system is its cheapness, whilst the only drawback the double-engine direct system can have is the apparently large outlay necessary, which certainly disappears to some extent when applied to such large farms and such soils as they are intended for. The manual labour attached to the former system, which was for some years a drawback, has since been removed by the use of the Campaign's anchors, and others somewhat similar, whereby the number of hands in attendance has been reduced by about six men.

There is, however, a comparatively new set of direct tackle by Messrs. Fowler, for which six-horse-power engines are in use, and substantial improvements are claimed; amongst them are the lightness and adaptability of the engines for other purposes, and that the cost is no more than that of a complete roundabout. This is of some importance, because when we have only one engine for the working of a single roundabout set, and it is also capable of being used for other purposes than cultivating, such as threshing corn, &c., it may oftentimes be required in more than one sort of work at a time, in which case the two engines offer advantages of different kinds, especially whilst one is in course of repair the other will be ready for use. Still we cannot discard the idea that the single roundabout tackle has a strong claim upon the attention of the home farmer for a number of reasons. First, the advantage it has over the double-engine tackle is that it can be worked from a road or any chosen position in an adjoining field without any removal, besides which it is better adapted for smaller fields, which may also be of an irregular shape, and on some properties where the enclosures cannot be altered this is important. An engine of eight-horse power is best for the general purposes of the farm, such as threshing and dressing corn, and also when in position under cover as it should be. With a properly appointed house for it to work in at any time when not engaged in the fields, it can be made to give the motive power to all the machines in use upon the farm, such as grinding corn into meal, breaking cake, crushing corn, cutting roots, cutting chaff, &c. In designing such a house for the care of the engine, as well as for its profitable use at any time, the floor should be so arranged that it may be easily removed in and out, and yet capable of being fixed firmly in a position for use by the adaptation of a stone or concrete floor for the purpose, and the house so placed that the power may be carried into the adjoining building by shaft and bands where all the implements for the manipulation of food upon the farm may be carried on with ease and economy. All the implements required on the farm for work on the cultivation of the land are now to be obtained perfectly adapted for the use of the eight-horse power portable engine. Let us take first its capability of doing a four-furrow plough and four-wheel presser at a moderate cost, also the drag, the harrow, the drill, the scarifier, the subsoiler, and in fact all the implements required for the perfect culture of the land at all seasons of the year are now available for use, and is only at present a question of the outlay required for their purchase.

There is no doubt that steam culture will continue to extend, more especially if low prices for cereal produce continue to prevail, because it can be plainly seen by the home farmer that nothing but the severest economy in every department of farm management will succeed in producing crops at the least cost. Steam power when judiciously applied will prove the greatest economy in every branch of farming, whether in the field or the home-stead. Every home farm consisting of from 800 to 400 acres and upwards will eventually possess a single roundabout set, if not a double set of direct steam tackle, which will of course displace a certain number of horses, the economy of which will be very great, because the expense of keeping horses, maintaining them in health and working condition, with all the incidental expenses attendant upon a set of well-bred and stout active animals, is always a serious item in farm management. It will prove unfortunate in the future, we fear, for the home farmer who only cultivates a small area, because at present the hiring of steam power cannot be made a matter of so much certainty as to time as we know to be most desirable, for in case the hiring could be effected as quickly as steam power for threshing this matter cannot be done so exactly when required for cultivating at all times. A few days or a week, however, will make all the difference in the work, because a change of weather in the interim may put a stop to the work entirely.

(To be continued.)

WORK ON THE HOME FARM.

Horse Labour.—The storms of wind and rain have been so heavy lately that the horses' work on the land has been impeded to some extent except upon the chalk, sand, or gravel soils. The home farmer should, however, regard the present open and mild weather as favourable, because it is likely to introduce a forward spring, which under the present circumstances must be of great consequence to all those who have considerable flocks of sheep and herds of cattle to provide for. The root crop having been so deficient and the hay crop so much damaged will in some cases make it very difficult to keep the stock of the farm in the usual condition without causing a larger expenditure than usual in oil cake and corn. The sooner the beans and peas are sown the better, especially where it is intended to sell them both green in the pod for the London and other town markets, in which case it is requisite to look out soon enough for a customer who will purchase at so much per acre, pick and carry away at their own cost within a given time, as there will then be abundant opportunity of planting a crop of cabbages, to come in either for market or for consumption on the farm. The grass lands should now be shut up if intended for hay, as the cattle do some injury by treading;

therefore we prefer to keep out the cattle, and have the land rolled as soon as there is sufficient grass sprung up to keep the roller clean in its work. The steam rollers of various kinds are worth the attention of the home farmer upon those domains where there is much pasture and park lands, because no other roller is so perfect in operation as the steam roller, whether it is used for grass land or other purposes, and it is especially advantageous for use in those long ranges of park roads which often prevail on some noblemen's and gentlemen's estates. It leaves the roads in a handsome finished state which can be obtained in no other way, there being no horse tracks or any other disight on the surface of the roads. Barley may now be sown, the sooner the better, if the land is naturally dry; also the white Canadian oats. The white Lincoln early sort with some others may now be sown with advantage. We know of such having produced a good crop last year, the land now being sown with wheat. This was our practice many years ago: wheat, white oats, followed by wheat again. We, however, generally managed to grow a crop of stubble turnips fed off by sheep between. We have succeeded well with white oats and stubble turnips fed off with cake, &c., and sown to white oats again, and on referring to our farm notes we find that on one occasion we grew seventeen sacks of white oats, followed by stubble turnips, and afterwards grew nineteen sacks per acre, both bearing a capital sample weighing 45 lbs. per bushel. In fact these early white oats are surer and even in cropping than wheat, and as they come off the land so early we are sure of a good crop of green stuff the same autumn. Sometimes we plant Savoy cabbages as fast as the corn is cut, the land being ploughed and planted before the oats are carted to the stack; in the same way we grow excellent turnips; we also set a high value upon the white oat straw, because it must be cut early to save the grain, besides which, being so early to harvest the condition of the straw will always be suitable for feeding cattle, for which purpose we have always used it, never giving fattening bullocks any hay.

The land which had been ploughed up after harvest and intended for the planting with potatoes this spring will have been forked over in the early part of the winter to take up any lumps of couch grass, docks, &c., which may have become visible at that time. The land should now upon the first start of vegetation be again looked over in the same way, so that any remaining grass or weeds may be forked out in readiness for ploughing and planting when the land is dry enough. If the early sorts are planted we advise the home farmer not to hinder time by drawing either farmyard or town dung on to the land, but to be prepared with the best Peruvian guano properly broken and sifted, so that at the time of planting, about 4 or 5 cwt. per acre of guano mixed with some damp ashes may be strewn by hand along the furrow just behind the planters in the same furrow with the sets of potatoes. For a long period this proved successful with us, as we could get over the work very quickly and give the crop the benefit of early planting. We never think of applying dung to potatoes in the fresh state at planting time. We have for many years proved that 5 cwt. of Peruvian guano per acre is to be preferred to any amount of dung we have ever seen laid on. The odd horse should now be employed in drawing Howard's steel chain harrow over the clover seeds sown in the wheat, for there is commonly a lot of stubble left, which the chain harrow will now break down out of the way of the hay crop, but it should be done before rolling.

Hand Labour.—The men will be variously employed. Trenching in the meadows must not be put off any longer; banking and hedging, ditching, &c., should now be completed before the dry weather sets in. Planting of whitethorns should not be longer delayed. The early lambs bred from horned ewes are now fast being sent to London, and sold off at the various markets. The ewes as fast as the lambs are sold will soon be ready for sale if they have been allowed plenty of cake and beanmeal with the roots, but the cake may be reduced and the beanmeal rather increased as the lambs are going and ready to go to the market. This will make the ewes handle firmer and more approved by the butcher. We find there are a number of ewes failing and slightly touched with the rot even where they have suckled their lambs, in which case the extra allowance of beanmeal and an immediate sale of the ewes is of the utmost consequence, for it is difficult to say at all times to what extent the ewes may be affected. The forward Down lambs will now require great attention and regular feeding, and if it is desired to make them of first quality they should never see an empty trough.

A FANCIER'S POULTRY SHOW.

OUR heading sounds a strange one. Who but fanciers, it will be said, ever trouble themselves about a poultry show, and what birds except fancy birds are ever shown? Observations which we have often made about a growing and regrettable tendency to make the exhibition of poultry a commercial speculation will somewhat have prepared our readers for the subject of this article. The novelty of shows has long worn off; the entrance money taken at the doors from crowds of the general public no longer pays expenses; classes which will pay can alone be afforded, and, as we

have often said, many interesting fancy breeds are thus excluded, soon neglected, and allowed to become extinct.

We have seen of late with much pleasure that the Poultry Club has been guaranteeing classes at shows held under its rules. The guarantee is thus given: Suppose the prize money offered for this class to be 70s., as at a show recently held, and the entry fee 6s. per pen, it will require twelve entries to make that class self-supporting. If so many are made, well and good; if more, so much the better for the society; if less, the Club pays the deficiency, which it can well afford to do. We are informed that the accounts of the Club just about to be published will show a large balance in the Treasurer's hands. It has been the policy of the Committee to wait and not commit themselves to any large undertaking till the funds in their hands should make them independent in the case of accidental calls upon them. The time seems approaching when in our opinion the Club might attempt something on a larger scale for the encouragement of the breeding and exhibition of all varieties of poultry, including those kinds which are wont to be ignored at shows.

How the objects of such a show might best be attained it is hardly for us to suggest. The most complete and satisfactory method would probably be for the Club to hold a show of its own; it could then arrange its classes in its own way, and might perhaps appoint a special committee, as far as possible representatives of all breeds, to assist its own standing Committee. Of course there would be some difficulties in carrying out such a plan on a large scale; the chief being the fact that those upon whose shoulders the work would fall would have to come from a distance, whereas the managers of ordinary shows are on the spot and find less trouble in attending to their duties between other work. In spite, however, of such inconveniences we feel confident that the greater part of the Committee would make some sacrifice for the attainment of so desirable an object. It would be possible, however, for a Club show to be, so to speak, grafted on to some already established and well-managed exhibition; the Club guaranteeing the Committee against all losses on the condition of the show arrangement being under its control.

In either case a show so held would be hardly complete without some class or classes for foreign exhibits to be judged according to continental ideas of them. We should hope to see birds sent to such an exhibition from English yards where pure bred and fine stocks are kept but never shown, simply from a certain disrepute into which poultry showing fell some time ago, but from which we trust it is now emerging. We shall endeavour ere long to publish a complete list of the breeds of poultry which have been known to exist in purity within the last thirty years, but which are now practically lost. We have written about several under the heading of the Variety class, we have others put down as subjects for future articles; but we believe that a real fancier's show at which there would be a chance of some of them re-appearing would do more good than any number of articles.

LANGSHANS.

I HAVE recently learnt with much surprise and some consternation that the birds which were awarded the second prize in the Langshan class at Shrewsbury had yellow legs.

Notwithstanding all that has been written in various publications with a view to depreciate this splendid breed, and being also aware that Langshan breeders know as well as myself that such a bird could not be pure, I am quite at a loss to know how a prize could have been awarded for yellow-legged birds. I have seen many large shows, and although some evil-disposed persons have entered and shown birds with yellow legs, yet I never before saw or heard of such having a prize. As the same exhibitor was awarded the cup at Dorchester, and as I was the cause of procuring the cup, I have great doubts as to the purity of the birds that received it. I have had numerous inquiries for Langshans, but the question of yellow legs has never been alluded to, showing most clearly that breeders know full well they could not be Langshans if they had.

Having obtained prizes this year at Birmingham and other places, and being also an exhibitor at the Dorchester Show, I am anxious that the public should be rightly informed of the true colour of Langshan legs, which are of a dark slate colour with pink between the toes.—H. J. BUCHAN, *Member of the Langshan Club.*

THE CRYSTAL PALACE BIRD SHOW.

THIS promises to maintain its character as the chief event in cage-bird circles, judging from the entries which number one thousand five hundred. A specimen card for each entry bearing the number of the class, and also the number of the entry, with instructions upon the reverse side of material importance to the exhibitor, has come under our notice. We believe it will greatly facilitate the carrying out of the working portion of the Exhibition affecting the Palace officials, by the work being quicker performed, and more time thus being devoted to the comfort of the birds, which is an important matter with many of them shipped from distant parts. Another new feature is the excellent linen label (8 inches by 6 inches), provided for exhibitors' pack-

ages when forwarding them to the Show. The label has four eyelet-holes, is printed with very bold type, and the instructions are such that greater facility will be afforded to the railway officials in forwarding the packages to their respective destinations, and with less likelihood of the parcels being overlooked, as they are sometimes when bearing diminutive addressed labels.

VARIETIES.

THE Committee of the British Bee-keepers' Association met on Wednesday, February 18th, at 3 P.M. Present Mr. T. W. Cowan in the chair. Revs. E. Bartrum and George Raynor; Messrs. Abbott, Cheshire, Godfrey, Hooker, Hunter, and Jackson, and Rev. H. E. Peel, Hon. Sec. The report from the Diagram Committee was received, stating that Messrs. Waterlow were proceeding as quickly as the nature of a work involving so much care would allow, and that the part of the lithographic stone at present complete was very beautifully executed. Rev. E. Bartrum proposed, and Mr. Cheshire seconded, a proposition which was carried unanimously, settling the conditions on which flower show committees could borrow the tent of the Association and receive assistance in providing manipulations with living bees. Messrs. Jackson, Hooker, and Abbott were constituted a sub-committee to confer with the Dairy Show Committee respecting the introduction of apicultural features at their shows. It was agreed to extend the duration of the annual Show of the Association at the Royal Horticultural Society's Gardens until the evening of Monday, August 2nd (Bank Holiday), in order to give an opportunity to the numerous visitors expected on that day.

PART 25 of "Cassell's Illustrated Book of Canaries and Cage Birds" contains a beautifully executed coloured group of Cockatoos and Parakeets, and the letterpress is, as usual, clear and instructive. Part 40 of the "Illustrated Book of Poultry" contains a coloured plate of Guinea Fowls, with practical and descriptive notes on Bantams.

WE have received Suttons' "Farmers' Year Book," in which all the chief forage plants and roots are clearly illustrated. There are also excellent articles on the chemistry of farm crops and the vermin of the farm, with a concise calendar of farm operations under monthly headings. In Messrs. Webb & Sons' annual catalogue of farm seeds are similarly representations of grasses, forage plants, and roots, including full-sized engravings of the popular Swede Webbs' Imperial, and Webbs' Yellow Intermediate Mangold Wurtzel.

MR. S. C. WALKER, statistician of the New York Produce Exchange, states that during the year 1879 about six million head of cattle, 12,085,861 lbs. of bacon and hams, 5,051,278 lbs. of lard, 8967 barrels of pork, 2,486,098 lbs. of cheese, 1,501,027 lbs. of tallow, and 2816 barrels of beef, were carried over the railroads from the west for export purposes. He states, further, that since July, 1873, 127,000,000 bushels of wheat have been exported from America to Europe, and there was still an available surplus for export on January 1st, 1880, of about 86,000,000 bushels.

NEW AMERICAN POTATOES.—Mr. Garrison the mixer of Peach Blow is, says the *Prairie Farmer*, introducing two new varieties of potatoes this season, which our contemporary describes as follows:—The "Prairie Farmer" potato is a seedling from the Early Rose, though, unlike its parent, it has a white skin. In quality it is superior, having a fine grain, excellent flavour either boiled or baked (as we found from actual test), is dry, floury, and of large and uniform size, as shown by a quantity exhibited, which represents a fair average. Its season is between the very early and the late varieties; it is very productive, and is considered one of the finest and best varieties for market and general cultivation yet produced. The "Chicago Beauty" is also a seedling from the Early Rose. Its size is about medium; a compact grower; flesh white, floury; season early, from a week to ten days earlier than Early Rose. It possesses the peculiarity of solid flesh before it is fully matured. It is very productive, and Mr. Garrison considers it one of the best for market and general culture.

LAND IMPROVEMENT.—We have described subsoiling as consisting of stirring or ripping up the underlying soil without bringing it to the surface. Trenching, on the other hand, is an inversion of the soil, whereby the upper soil is buried and the under or subsoil brought to the surface. It is an operation which requires great caution, as the effect may be to bring up a cold hard subsoil which will take many years to render even moderately fertile. In the case of deep alluvial lands, especially where the surface soil has been worn out by injudicious cropping and the subsoil is of good quality, trenching either by spade labour or by means of heavy ploughs constructed for the purpose, or, what is still better, by steam cultivation, may be done with much advantage. In all cases where land is winter-ploughed preparatory to root crops it may be partially trenching by ploughing deeper than usual; and even this partial application of the principle is frequently attended with such success as to astonish all who are acquainted with the benefit to be derived from judicious deep cultivation. Previous to improvements effected at Yester by the Marquis of Tweedale, the letting value of the land was from

2s. 6d. to 10s. an acre. The land was thorough drained twelve months before it was subsoil-trench-ploughed. The results were that the expense of draining and subsequent deep ploughing, estimated at £2 18s. per acre, was paid by the first crop; the land was rendered much easier to work, and its letting value was increased to 40s. per acre. Mr. Penland of Black Hall, near Drogheda, saw the system at Yeater and its results, and he introduced it on his farm in the county of Louth. The soil was a cold stiff clay full of boulders. It was drained and then subsoil-trench-ploughed, and the result was that the yield of wheat was doubled without the aid of manure.—(*Irish Farmers' Gazette*.)

BRITISH BEE-KEEPERS' ASSOCIATION.

THE annual meeting of this Association was held in the Board-room, Chamber of Trade, 44, Strand, on the 18th inst., under the presidency of the Baroness Burdett Coutts. After the usual preliminaries the Baroness addressed the meeting in a few graceful words, expressing her pleasure at the manifest progress of the Association, and suggesting that the Presidents of county associations should be elected as Vice-Presidents of the parent Association. The condition of Ireland was referred to. The Baroness expressed a hope that the work which Canon Bagot has taken up would do much in enlightening the peasantry in better methods of bee culture to their immense advantage, as the plans they now follow are very crude and profitless, and adding that perhaps the British Bee-keepers' Association might see it wise to organise a series of gatherings in the sister island. The report was moved from the chair, and carried unanimously.

Dr. Ogle and Mr. Jackson of Slindon, in moving and seconding a vote of thanks to the officers and Committee, spoke in high terms of the position the Society had achieved in their hands. Mr. T. W. Cowan and Rev. E. Bartrum moved and seconded a vote of thanks to the Council of the Society for the Prevention of Cruelty to Animals for the gratuitous use of the Board-room for Committee meetings.

Rev. Herbert B. Peel proposed and Mr. F. Cheshire seconded a vote of thanks to the Royal Horticultural Society for their hearty and ready co-operation in the projects of the British Bee-keepers' Association. After the election of officers, in which warm expression was given to the value of the Hon. Sec., the list of votes for the Committee (the whole of whom have been re-elected) was read. Mr. Huckle was appointed paid Assistant Secretary.

The proposition expressing the desirability of investing the sums received as qualifications for life memberships excited considerable discussion, some thinking that in a young and rapidly growing Society it was not advisable that any of the funds should be locked up, but the proposition was at length affirmed.

Perhaps the most important proposition was moved by the Rev. E. Bartrum in an able and telling speech:—That in the opinion of this Association it is advisable that a professorship of apiculture should be established in connection with the Science and Art Department at South Kensington, and that the Committee be requested to take such steps as shall seem expedient with a view to the establishment of a professorship. The proposer pointed out that in relation to apiculture we were behindhand, as we formerly were in drawing, designing, and many branches of technical knowledge, but that the schools of design had accomplished a work in relation to these objects the importance and value of which to the community it was impossible to estimate. No large town could now be visited without seeing signs of progress. Apiculture being so behindhand, should we not do well by taking the same steps here as have been done so much in other directions? The duties of a professor would be to visit the normal schools and training colleges. "Just look," said the speaker, "at the wonderful ignorance of our teachers on this question, while in Germany no man is admitted to a mastership of a village school without he can pass an examination in bee culture. The value of the bee is not measured by its power of producing honey. It has an influence of the most marked kind upon many of our crops, and without its visits to our orchards their fruitage would be little better than total failure. In ten years we should by this step do a work which we can hardly imagine. If the Association cordially sanction my proposal the Committee will use its influence with the Department to bring about so desirable a consummation; and in taking this step we shall not be regarded as riding a personal hobby, for our enthusiasm will rest in the conviction that we are advocating what will benefit the country at large."

The Rev. George Raynor seconded the proposition with equal ability, remarking that the present moment seemed perhaps an unfitting one for bringing it forward; but he thought that in the present depressed condition of agriculture the farmers might well catch at every straw presented to them. The fertilisation of many crops, especially clover seed, received peculiar help from bee-keeping. "I am sure, then," added he, "that a better time could not be found for the question in hand, and here, it may be, that Agriculture's extremity will be Apiculture's opportunity. We should endeavour to connect this subject with the teaching of youth. It is impossible to prevent the cottager adhering to the brimstone pit, but with the rising generation we may have hope to

spread enlightened ideas." The proposition was unanimously affirmed. Mr. J. P. Jackson proposed the formation of a reference and loan library of works relating to bee-culture, which after debate was carried *seu. con.* The meeting was large and influential, many prominent apiculturists from a distance being present. The prize schedule will be considered at the next meeting of the Committee on March 10th.

FOUL BROOD AMONGST BEES.

TRANSLATED from the "Bienenzeitung" of a discussion at the German Bee-keepers' meeting at Prague. Communicated by Mr. Alfred Neighbour, and continued from page 150.

Mr. Hilberd, Estate Proprietor of Maciejewo.—I have no doubt you all would prefer that my observations should be rather of a practical nature. As regards the theory of foul brood, you have the opportunity of making yourselves perfectly acquainted with the subject from my articles in the "Bienenzeitung." Mr. Riemert in introducing the subject has entered pretty fully into the question, and has made it easy for me to follow. I shall endeavour to go more thoroughly into this matter, which I consider of the greatest importance. If any of the gentlemen present shall consider some of my remarks not sufficiently exhaustive I shall be glad if they will tell me so, and I will answer any question put to me as fully as I can. I do not wish to occupy your time and patience unnecessarily; besides, I intend to drop the theory of foul brood altogether.

Although hundreds of samples of foul brood have been sent to me within the last twelve months, enough to make it appear as if the whole of Hilberd's house were infected with this disease, I will not trouble you with many of these samples, which are generally thrown into the fire after I have examined them under the microscope. The samples now before you have been in my possession for two months, and they will give you a very good idea as to the appearance of foul brood.

Mr. Reinert mentions only one cause which he supposes, and not improperly so, to be the principal cause of the origin of foul brood. The numerous cases of foul brood in the present year are no doubt primarily due to the exceptionally unfavourable weather in spring and the consequent diminution in the population of the colonies. Breeding having commenced very early and the bees in search of provision perishing on these excursions, the brood was not properly attended to, and this, according to my theory, was the cause of the prevalence of this disease this season. This is the one cause referred to by the previous speaker, but it would be rather rash to suppose it to be the only cause of the development of foul brood. I go somewhat further. The causes of foul brood may be a hundredfold, but we only know a few, and in the majority of cases we are entirely ignorant of the causes.

In addition to the cause mentioned by Mr. Reinert foul brood, of course, is communicated by infection, and he is perfectly right in condemning any concealment of the disease. We ought to direct all our efforts to get our legislators to pass at the earliest possible moment a cattle-disease act that would also afford protection to our bees, in order that he who conceals the existence of foul brood from his fellow bee-keepers might be punished as an offender in the same manner as he who imports cattle from a country where the cattle plague exists.

A further cause of foul brood may probably, in my humble opinion, be found in the sources of honey which the bees visit. There are many bee-keepers who rejoice to see a little honeydew appearing, but I seriously think that districts where these aphides are plentiful is before all others exposed to the dangers of an outbreak of foul brood. If the harvest from honeydew is but of short duration and the colonies well populated the bees will soon remove any dead larvae from the cells and cleanse the latter, but if this harvest continues for a considerable length of time it is quite possible that the large quantity of honey collected might very well originate foul brood; because, as everybody knows, honey derived from honeydew contains an immense number of fungoid spores, and foul brood is capable of being propagated only by so-called foul brood Bacteria—some kind of fungus.

Chilling of the brood may be mentioned as another probable cause of foul brood. In our modern system of bee-keeping, according to Dr. Dzierzon, the danger in this respect indeed is very great, for a beginner does not feel satisfied unless he can examine his colonies several times a day.

Improper feeding is a further cause of the outbreak of foul brood. There are many among us who treat the queen bee as they would treat a pig. Every one of us might learn a lesson in cleanliness from our insects, but we shut our eyes. In feeding many mistakes are made, and especially in stimulative feeding. Notwithstanding my being an admirer and advocate of stimulative feeding I advise every beginner in bee-keeping not to attempt it. Stimulative feeding is like a two-edged sword in the hands of a child.

Foul brood may further be caused by the habit of making artificial swarms early in the season and in great numbers. Every owner of a colony is anxious to make artificial swarms, and all his

thoughts are bent upon increasing his stocks. All he need do, he thinks, is to put a brood comb into a hive together with a queen and a few worker bees.

I merely intended to throw out a few hints to indicate to you the manner in which foul brood may originate. I will say a few words as to how it may be cured. Seven years ago, as you may remember, I had the misfortune—or rather the good fortune as it has turned out—of all my colonies, sixty in number, becoming infected with foul brood. My apiary was like a carrion pit, and when I recall to my mind that anxious time I would rather wish to be dead than pass through the same excitement and horrors once more. As you may imagine, all my efforts were directed to discover how to become master of this disease. I did not, of course, like many bee-keepers conceal the outbreak of foul brood in my apiary, but told everybody interested in bees that all my colonies were infected. I will not trouble you with an account as to how I endeavoured to obtain further information and how, in order to make myself acquainted with the causes of the disease, I studied the labours of Schinfeld and the late Sanitary Counsellor Dr. Preuss, whose early death we all deplore. It happened at this very same time that Professor Holbe of Leipzig discovered salicylic acid. What could be more natural than that I should have tried to cure my infected colonies by means of salicylic acid? It was, of course, to be expected that my experiments would not altogether prove a success at first, and many a colony I have sacrificed by the application of salicylic acid, because I expected the bees to take this medicine in such a form as to be absolutely poisonous to them. At length I was fortunate enough to be able to announce at the meeting in Strasbourg five years ago that I had been successful in my experiments to cure foul brood by means of salicylic acid, and I was further able to state that Count Kolowrat Krakowetzky, whose bees had been suffering from the same disease, would give confirmatory evidence as to the efficiency of my remedy.

As you are aware, I used salicylic acid to cure foul brood five years ago, but I have since become more and more convinced that it is absolutely impossible to go through the tedious process of applying salicylic acid in solution where the number of colonies is considerable, and I have spared no pains in finding out the best way of applying my remedy. After a great many experiments, extending over several years, I was able to announce at the meeting in Greifswald in 1878, that the simplest way imaginable to cure foul brood in a short time is by salicylic acid vapour. At the last year's meeting I stated that I was not then in a position to state with absolute certainty whether salicylic acid vapour was injurious or not to the brood while in its most tender stages of development. I was not able to give a decided opinion on this point at that time, and remarked that until the matter had been further inquired into it would be advisable to apply salicylic acid vapour only after the queen had been removed and the stock had been left without a queen for six to nine days, in order that in the meantime the bees might seal the open cells containing brood, which could not then be injuriously affected by the vapour. However, I could not rest, and as soon as the winter was over I recommenced my experiments on two of my colonies which I infected with foul brood. The foul brood matter is simply soaked in lukewarm water, and within six days the disease is fully developed in the stock. Of course I then set to work to effect a cure with salicylic acid in the form of vapour. I had no apparatus last year, but during the winter months I contrived to construct the small apparatus which I have brought with me to Prague to show you. In three days' time I had the satisfaction to find that salicylic acid vapour, judiciously administered, was absolutely harmless to colonies of bees in which foul brood was extensively developed and which had not been deprived of their queen.

After I had made known my cure for foul brood I received a great number of letters like the following:—"I fumigated my bees and killed them, and they did not revive." Another bee-keeper wrote to me: "The application of salicylic acid vapour in my apiary has been a great success." In the former case I found out the cause of the failure. The man had stopped up every crevice in the hive and treated his bees as a piece of bacon! (Laughter). Gentlemen, it would have served him right if he had been shut up in a small room and treated to a little salicylic acid vapour.

(To be continued.)

OUR LETTER BOX.

FOOD FOR DUCKS (*Inquirer*).—Boiled roots mixed with a little barley meal are good food for them, the same kind of food that is usually given to pigs. Boiled but cold oatmeal porridge is the best food for ducklings until they are ten days old; afterwards barley meal, oats, and pollard, with plenty of green food. They are ready for table in eight or ten weeks if well fed. Never give them hard spring water, but water from a pond. Any variety will devour the slugs in your garden, but the common Rouen Ducks are the hardiest and most active.

FOWLS LAYING SOFT EGGS (*Mrs C.*).—As your fowls have had plenty of lime and green food they have probably infamed egg organs. As a remedy let them have a low diet of boiled mashed potatoes and boiled rice for a week or more, giving a dessert-spoonful of castor oil, and a pill containing one grain of calomel and one-twelfth of a grain of tartar emetic every second day for a week.

FEEDING FOWLS (*J. M. K.*).—Cheap and good food for hens for egg-producing is a mixture of cracked maize and thin grinding barley.

FEEDING COWS (*Idem*).—There is nothing better nor much cheaper for keeping a cow in full milk than mangolds, oat straw, crushed maize, and thin cheap wheat of the past year's growth in admixture. Brewers' grains will do instead of crushed wheat if milk instead of butter is required. There is no better cabbage than the Drumhead Savoy, and when not planted too early they will stand any amount of frost, but in weight per acre they will not reach the Champion Drumhead.

SOWING SUMMER TARES (*A. H. A.*).—The sooner you sow your summer tares the better. It is advisable to drill the seed in when the ground is moderately dry and works freely.

MR. PETTIGREW'S SYSTEM OF MANAGEMENT (*A. B.*).—An article in reply to your letter is in type and will appear in an early issue.

CHESTER'S SECTION HOLDER (*A. R. F.*).—This holder has no top bar. Such is quite unnecessary, as the mere weight of the whole as it hangs in the hive keeps the side bar in position against the boxes. Should, however, the size of the sections used be such as not to fill to the top the section-holder, then the space might be filled by a wooden bar, but such would not be any structural advantage to the holder.

SEPARATORS IN HIVES—QUEEN FERTILISATION (*F. W. S.*).—On referring to Mr. Raith's article on sectional supers you will observe that free communication of three-eighths of an inch or so is provided above and below each separator, thus allowing an undivided cluster of bees. In theory this may appear scarcely correct, but in practice it will be found to be so. As to loss of heat caused by tin separators, it should be remembered that tin only feels cold when it is cold; very soon after being placed over a stock fit for spring it acquires the same temperature as the enclosed air, and then only part with a very small portion of heat by conduction towards the exposed ends. In very warm seasons this is rather an advantage than otherwise, and in colder weather can easily be prevented by wrapping a fold or two of cloth all round. In regard to fertilisation of queens in confinement, you are quite correct in regarding it as necessary to secure that the queen can by no possibility escape during the process of handling. Mr. Raith, however, before writing further on the subject prefers to wait the results of actual trials.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.		9 A.M.					IN THE DAY.						State.
1880.	Baromet. ter at 32 inches and Sea Level	Hygrome- ter.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature.		In sun.	On grass.	In shade.	
Feb.		Dry.	Wet.			Max.	Min.						
Sun.15	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	deg.	deg.	In.	
Mo. 16	29.798	42.5	41.8	S.	37.1	47.4	41.3	50.3	58.3	58.3	58.3	6.05	
Tu. 17	29.125	46.4	45.9	S.	38.7	53.7	42.1	70.0	41.6	41.6	41.6	6.05	
We. 18	30.004	46.0	38.1	N.W.	40.5	51.7	39.5	52.5	52.5	52.5	52.5	6.05	
Th. 19	30.514	46.5	45.5	S.S.W.	40.7	53.7	39.4	58.4	58.4	58.4	58.4	6.05	
Fri. 20	30.390	50.5	49.0	S.W.	42.5	53.5	45.9	58.5	58.5	58.5	58.5	6.05	
Sat. 21	30.407	49.6	47.5	W.S.W.	43.6	53.7	46.9	58.5	58.5	58.5	58.5	6.05	
	29.770	44.9	43.5	W.	43.5	53.0	41.4	73.7	56.5	56.5	56.5	6.10	
Means.	29.397	45.7	44.6		40.8	52.1	42.5	61.4	56.6	56.6	56.6	11.15	

REMARKS.

15th.—Dull, damp morning; fine with little sunshine in middle of the day; wet evening.

16th.—Wet morning, fine afternoon, high gusty wind; clear, calm evening.

17th.—Wet, windy morning; very fine day with sunshine; clear starlight night.

18th.—Wet morning, fine and bright after 9.30 A.M.; rain and wind in evening.

19th.—Very squally all day, with occasional showers.

20th.—Very windy, showery day, bright at intervals, thunder at 4 P.M.

21st.—Very fine bright morning; heavy showers in afternoon; fair evening but damp.

A mild week, with low barometer, and frequent rain.—G. J. SYMON.

COVENT GARDEN MARKET.—FEBRUARY 25.

Our market remains the same.

FRUIT.

	s.	d.	s.	d.		s.	d.	s.	d.
Apples.....	1	0	0	0	Nectarines....	1	0	0	0
Apricots.....	1	0	0	0	Oranges.....	1	0	0	0
Cherries.....	1	0	0	0	Peaches.....	1	0	0	0
Chestnuts.....	1	0	0	0	Pears, kitchen..	1	0	0	0
Figs.....	1	0	0	0	dessert.....	1	0	0	0
Filberts.....	1	0	0	0	Pine Apples....	1	0	0	0
Cobs.....	1	0	0	0	Plums.....	1	0	0	0
Gooseberries..	1	0	0	0	Raspberries....	1	0	0	0
Grapes, house..	1	0	0	0	Walnuts.....	1	0	0	0
Lemons.....	1	0	0	0	ditto.....	1	0	0	0
Melons.....	1	0	0	0					

VEGETABLES.

	s.	d.	s.	d.		s.	d.	s.	d.
Artichokes.....	1	0	0	0	Mushrooms....	1	0	0	0
Asparagus.....	1	0	0	0	Mustard & Cress	1	0	0	0
Beans, Kidney..	1	0	0	0	Onions.....	1	0	0	0
Beet, Red.....	1	0	0	0	pickling.....	1	0	0	0
Broccoli.....	1	0	0	0	Parsley.....	1	0	0	0
Brussels Sprouts	1	0	0	0	Parsnips.....	1	0	0	0
Cabbage.....	1	0	0	0	Peas.....	1	0	0	0
Carrots.....	1	0	0	0	Potatoes.....	1	0	0	0
Capicoums.....	1	0	0	0	Kidney.....	1	0	0	0
Cauliflowers...	1	0	0	0	Radishes.....	1	0	0	0
Celery.....	1	0	0	0	Rhubarb.....	1	0	0	0
Ciceworts.....	1	0	0	0	Salsify.....	1	0	0	0
Cucumbers.....	1	0	0	0	Sorrel.....	1	0	0	0
Endive.....	1	0	0	0	Shallots.....	1	0	0	0
Fennel.....	1	0	0	0	Spinach.....	1	0	0	0
Garlic.....	1	0	0	0	Turnips.....	1	0	0	0
Herbs.....	1	0	0	0	Vegetable Marrows	1	0	0	0
Leeks.....	1	0	0	0					

WEEKLY CALENDAR.

Day of Month	Day of Week	MARCH 4—10, 1880.	Average Temperature near London.			Sun Rises.		Sun Sets.		Moon Rises.		Moon Sets.		Moon's Age.		Clock before Sun.		Day of Year.
			Day.	Night.	Mean.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	Days.	m. s.			
4	TH	Royal Society at 8.30 P.M. Linnean Society at 8 P.M.	48.9	31.8	40.3	6 40	5 44	2 36	9 59	25	5 44	64						64
5	F		48.6	32.3	40.4	6 37	5 46	3 33	11 7	24	5 46	65						65
6	S	4TH SUNDAY IN LENT.	49.1	32.4	40.7	6 35	5 47	4 16	0 34	25	5 47	66						66
7	SUN		49.1	31.5	40.3	6 33	5 49	4 48	1 46	26	5 49	67						67
8	M	Royal Horticultural Society—Fruit and Floral Com-Society of Arts at 8 P.M. (mittee at 11 A.M.	49.2	31.1	40.1	6 31	5 51	5 13	3 7	27	5 51	68						68
9	TU		49.6	31.6	40.6	6 29	5 53	5 32	4 26	28	5 53	69						69
10	W		49.1	32.3	40.7	6 26	5 54	5 50	5 43	29	5 54	70						70

From observations taken near London during forty-three years, the average day temperature of the week is 49.1°; and its night temperature 31.8°.

TOMATO CULTIVATION.



ALTHOUGH the Tomato was introduced into this country nearly three hundred years ago from South America, it has not been what could be termed a popular esculent until comparatively recent years, and even now, I fear, it seldom has the attention it deserves.

The Tomato is of free growth with a robust constitution, and is rarely attacked by insects, consequently cultivators often seem to consider any corner or back wall of a house good enough for it, and the early treatment of the plants out of doors does much to undermine their natural vigour. Thus results are not nearly what they might be, the fruit being deficient in quantity and in flavour; in fact the latter quality seems lost sight of by many, for how few think of tasting a Tomato until it has passed into the salad bowl. This, of course, is partly attributable to our cool summers, which seldom cause us to require such a juicy and delicious quencher of thirst as the fruit in question undoubtedly is when well grown.

I draw attention to the Tomato at this time, as now the foundation must be laid of a successful crop by affording the young plants good treatment. I believe it is not necessary to grow many Tomato plants to insure a good supply: it is more satisfactory to grow a few well. A fair supply is often obtained by growing numbers of plants in different parts of the houses, and wherever half a dozen square feet of bare wall is available outside; but my experience is, that three or four dozen plants raised early in the season, if treated from the first with care equal to that we bestow on forced Beans or on early Celery, would produce earlier, better, and more fruit than a greater number of plants grown with less careful treatment. I refer to this because last summer I read articles in the *Journal of Horticulture* advocating the planting of Tomatoes in any shaded position unsuited for anything else, but I assert most confidently that vastly superior results are attainable by giving the plants a good position.

My practice is to sow the seed very thinly in pans in January, and to place the pans close to the glass in a moderate temperature, but unless suitable structures are provided for growing-on the plants seed must not be sown so early. When the young plants are large enough to handle four dozen are pricked-off singly into 48-size pots, and these when nearly half filled with soil are returned to a position as near the glass as possible. In the course of ten days the pots must be filled with soil, as the stems of the seedlings will be then quite sturdy. The plants are afterwards shifted into larger pots as necessary. I do not mention any particular compost for growing Tomatoes, as they grow well in any good soil, only the plants are better without manure while young. By the beginning of April they are strong plants in 7-inch pots and have been gradually hardened-off. For the earliest fruit half a dozen plants are selected and planted a foot apart along the trellis at one end of the Melon house, and are simply trained as upright cordons, all laterals being removed as soon as formed. The main stem

produces plenty of bloom if it has been kept robust and short-jointed from the beginning. The plants might with advantage be planted earlier, only the bed is previously required for forwarding Strawberries and for propagating purposes. About the same time a score or so are planted out against the back wall of a greenhouse, where they are not at all shaded, and are trained as upright cordons, forming a succession to those in the warmer house. The rest remain in a cold frame till the first fine weather in May, when I plant them at the foot of a low wall; but for a month they require protection at night, which is given by large slates or pieces of board set against the wall, no lights being available at this season. Thus if fine weather sets in in June, the plants, being large and established, make the most of our too short summers.

All are trained alike. A single stem is taken upright, diagonally perhaps might be better, and all laterals are pinched out. Every assistance is given with liquid manure and soot water after the fruits begin to swell, as there is then no fear of the plants being too luxuriant if the pinching-out of laterals is constantly attended to, for unless the plants continue to carry their leaves to the very base of their stems, large and deep in colour, a perfect crop of fruit need not be expected. No leaf is ever removed, but by a little re-arrangement of the fruits and leaves the heavy masses of fruits are fully exposed to the light. Even in such a season as last the earlier bunches of fruit ripened outside, and the crop inside could not well have been heavier individually or collectively.

There is nothing original in this practice, I only wish to draw attention to the manner in which the Tomato is occasionally neglected, and if my remarks induce some gardeners to exercise a little more care in its culture my object is accomplished. The details of culture are of minor importance and must necessarily vary with circumstances. The old adage, that "what is worth doing is worth doing well," is as applicable here as in other cases.

I may mention that my plants were attacked by the disease, which so closely resembles the Potato disease, about the end of June, but after removing some affected fruits and leaves a thorough syringing with Ewing's mildew wash was given, and no more was seen of the unwelcome visitant. After observing this result I very carefully dressed 20 square yards of Potatoes in a border of early kidneys just showing signs of the attack, but the almost continuous rainfall of the next few days gave the mixture no chance, and, as might well be expected, there was no visible result.—R. CROSSLING.

QUALITY VERSUS QUANTITY.

EVERY new introduction among flowers, especially florists' flowers, raised in gardens should possess merit of form as well as of colour, and if possible of sweetness. Mere size ought not to dazzle us. Coarseness is an objectionable quality in a flower which the most exquisite colouring can only partially redeem. Of the existence of a tendency to drift in this direction I think there can be no doubt; for although the Floral Committee would not bestow its certificate upon an inferior flower, yet so many new plants are sent out

without such honourable distinction that the matter rests in the hands of seller and buyer in no inconsiderable degree. We have now giant *Cyclamens*, giant *Cinerarias*, giant *Gloxinias*, giant *Asters*, giant *Mignonette*, and even giant *Violets*. The specific *gigantea* and *giganteum* is becoming much more common than the more desirable *odorata*, *delicata*, and *elegantissima*.

I recently went into a house full of Persian *Cyclamens* in bloom. The new *C. giganteum* was represented by several plants, with flowers of extraordinary size but sadly deficient in the elegant form and regularity of the petals, which was so conspicuous and attractive in the elder and more numerous small-flowered section. Only one plant had sweet-scented flowers, which were plentiful enough, for the plant was a large one, but they were very small and had irregular ragged petals. Now this collection contained ample materials for cross-breeding—size, form, perfume, colour, and it is these high qualities in combination that we require. With the facilities of an ordinary garden it would be a work of years to form a really fine collection of this desirable flower; and this is noteworthy, because it so often proves that a single batch of seedlings is considered enough, when probably only two or three, or at most half a dozen of the plants, are worth keeping. How seldom do we see really fine blotched or mottled flowers, and yet it is evidently not difficult to raise them.

Varieties of *Viola odorata* are increasing, many of them having flowers of extraordinary size; but so far as my experience of them goes, none yield flowers abundantly. As an example of this I may instance a houseful of the old Russian and its large variety *The Czar*, which I have just now in full bloom; there are about a hundred plants of *The Czar* and some fourteen hundred of the old Russian, so the trial is on a sufficiently large scale to permit a fair judgment. *The Czar* has a good number of flowers, but the older small-flowered variety has quite six times as many, and is proportionately more useful; the flowers, too, are more prompt to open, and are altogether more valuable for a winter supply. Let it not be thought that I undervalue the larger flowers, for they have a delicious perfume and a fine dark colour, my object being rather to show that they are not so suitable for general culture as the others.

Not one word have I to say in favour of giant *Cowslips*. They are monstrosities, infinitely inferior to our wild *Cowslip*, and, like *Paul Neyron Rose*, are only worth culture as curiosities. It is probably curiosity combined with a desire to keep abreast of progressive improvements, that causes what might justly be termed novelties of a day to be purchased and cultivated. And I need not dwell farther upon particular examples; rather would I urge upon those who possess time for cross-breeding to keep those higher qualities which I have set forth always in view. Many florists' flowers are only to be obtained in quantity quickly from seed. The uncertainty of seedlings is proverbial. All the more care should therefore be taken to do all that is possible to ensure a close resemblance to the original or parent plant. I have a lively remembrance of my chagrin some years ago when every seedling from a large packet of *Lobelia* seed, that was to have been white with a clear blue margin, turned out a dull pale blue.—EDWARD LUCKHURST.

MIXED FLOWER BORDERS IN 1879.

LOBELIAS, PENTSTEMONS.

LOBELIAS in 1879 were, in my garden, all decidedly above the average. The dwarf varieties of *L. Erinus* and *L. ramosa* may be raised in thousands from one or two packets of seed, and if sown early under glass the seedlings come in early enough and are less trouble, though, perhaps, not such good plants as those from cuttings. They come in most usefully to take the place of *Crocuses* and *Snowdrops* which have died down. They fill any bare spots near the sides of the borders, and do especially well in any vacant places on the rockery. They will endure being pulled to pieces and transplanted with or without roots at any time, if they only receive sufficient water; and the seedling which come up abundantly in wet seasons where there have been plants the summer before, come in usefully for late flowering.

The larger *Lobelias*—*cardinalis*, *fulgens*, *syphilitica* and their varieties, being bog plants, succeeded well last summer; in dry seasons they require retentive soil and plenty of water. A bed I had of *L. cardinalis* was very bright from August to November. We hear that in its native American bogs the plant is biennial, dying after flowering, and that the seedlings stand frosts of many degrees below zero without injury. This

seems strange to English gardeners, who find it neither biennial nor hardy. It is difficult, however, to keep through winter either in the open ground or under glass. By keeping some potted in the greenhouse, some in a cold frame, and some in a warm frame, I always manage to save a stock, but it is difficult to say under what conditions it is least liable to be lost. All the crowns alive in March should be repotted singly and kept growing in warmth. *L. syphilitica* is a fine border plant in a wet retentive soil; the species has flowers of a rather pale purple colour, but there is also a pretty white variety. There are other varieties which I believe are hybrids between *L. fulgens* and *L. syphilitica*, and will perhaps be found difficult to keep in proportion as they approach the former type. I have two which I obtained from Messrs. James Dickson of Chester, named *L. violacea* and *L. Villarsii*, the former a rich violet colour, the latter a bright imperial purple; both are perfectly hardy and very ornamental. All the varieties of *L. fulgens* and *L. syphilitica* are worth trying in strong soils.

Pentstemons were remarkably fine in 1879 from August to November. I mean the mixed varieties formerly known of *P. gentianoides*, and now as *P. Hartwegii*, which I think include hybrids from several species. Of the others, with one or two exceptions, some are tender and difficult to rear, some not sufficiently ornamental, but a packet of choice mixed *Pentstemon* seed will afford variety enough. From a packet, price one shilling, obtained from Messrs. Carter and sown in August, 1878, I had last year several hundred fine plants of every shade and colour. They were kept in the seed pan in a greenhouse through the winter, pricked off in early spring, and planted out about May wherever I could find room for them. Never trust to the hardness of these *Pentstemons*, which behave very differently in different soils. Through mild winters they remain as shrubs, and if left alone make fine bushes next year, flowering from June onwards, but are generally too large for their place and degenerate if they survive the second winter. In warm soils when killed down by the frost they often come up again like herbaceous plants; but I advise everyone to preserve under shelter through winter a stock from the best varieties. This is done most easily. Some gardeners break off side branches, which are often already rooted at the base, and set them in thickly together under a sheltered south wall in the kitchen garden, to be trimmed into shape and transplanted in spring. Small lateral shoots broken off with the heel strike readily; but the best cuttings are the ends of the stronger shoots cut to a joint and planted ten or a dozen in a 9-inch pot, and sheltered from frost, to be planted out from the store pot about the end of April. Mind they are shaded when first taken, so that they never droop. Layers also root readily. Never forget your *Pentstemons*; they are raised so easily from either seed or cuttings, and saved so easily, that no gardener has any good excuse for being without them. *Pentstemon barbatus* (formerly *Chelone barbata*), a tall elegant plant with scarlet flowers, perfectly hardy and easily propagated by seed or division, should be in all mixed borders.—C. W. DOD.

VINE BORDERS AND VINE ROOTS.

THERE are two distinct modes adopted of making *Vine* borders—one, making the border its full width at the outset; the other, making it narrow at the first and increasing it in width yearly. Good *Grapes* have been grown under both systems, but the last named I prefer. When a border has additions made to its width yearly the front must be supported by a wall of turf. When the roots have filled the space allotted to them, and another portion of border has to be added, is it necessary to carefully break to pieces the wall of turf mentioned as is from time to time recommended? I think it is not essential to do this, nor is it necessary to exercise the scrupulous care over the numerous roots that appear through the wall in preventing them being broken. When they once reach the outside and are exposed to light and air, they soon present the appearance of air roots. After this and just inside the turf they branch into a network of fibres. So far from carefully preserving the young roots that protrude through the turf, I shave their ends off when making additions, and the fibry roots branch out from behind in tenfold numbers, instead of long straight roots running through the border and scarcely a fibre upon them. Now comes the question in making *Vine* borders, if the roots take to this front wall so freely, as they undoubtedly do, why should the turf used in the border be chopped to pieces, except a few inches to place amongst the

roots when the Vines have been lifted? Why should not turves about 2 inches thick be placed as cut in the border, and the bones, charcoal, or what other ingredients the different cultivators think necessary, be mixed in as the making of the border proceeds? The small portions that break off the turves in carting, and the soil particles that shake out of them, will fill up all interstices between the turves.

This question has been impressed forcibly on my mind by noting the long, straight, fibreless roots of some Vines that I recently lifted from a wide border that had been completed at one operation, with the close network of fibres that formed in the turf walls of a border that had been made in sections in the manner above indicated. I have heard it urged that more roots can be made by Vines in the summer than are beneficial; but I cannot see the force of the argument, and shall be glad to hear what experienced cultivators have to say on the subject. Certainly when a Vine border is formed in a great measure of a series of turf walls added at periodical intervals many more roots are produced than when the border is made its whole width at once, and the only objection I have heard urged against the sectional system is expressed by the words "too many roots."—W. BARDNEY.

ROSES.

I AM sorry to have offended Mr. Boyes, though certainly if he only wrote a month ago that the younger and stronger shoots resist the frost the best he was scarcely the first to say so, as I have said the same thing year by year for at least twenty years, since 1860. However, Mr. Boyes and I agree in the main about Roses, though I have never had the luck to find a perfectly hardy Rose that will resist all winters. One year I lost every standard but two out of 150, and those two were very much injured, and though they lived never did well again afterwards. No doubt some are comparatively more hardy than others, but no Rose is proof against some weather, as is evident by all the Roses grown on the north side of Paris being killed by the frost of last winter.—C. P. P.

FAILURE OF BRUSSELS SPROUTS.

WE hear from several quarters that Brussels Sprouts have failed during the winter. They made plenty of growth in autumn, but the little hard round sprouts on the stem, for which this plant is so valued, never formed. Probably there may be some readers of the Journal who have experienced this, and if so they should now guard against an occurrence of the same kind next year by sowing their Brussels Sprout seed as early as possible. If sown now and the plants are well grown the sprouts will form during the latter part of August, September, and October. When the plants are so late that they are only beginning to fold in by the end of October the sprouts will be next to worthless during the whole winter, and they will run to seed as soon as mild weather comes in spring. Such, I think, must have been the condition of all sprouts that have failed this winter. In 1879 we planted quantities of Suttons' Matchless, Carters' Improved, and the Dalkeith Selected Sprouts, and all of them have done remarkably well. Three rows of the Albert Sprouts were grown beside some of the others, and they alone failed to form sprouts. Being a cross with the Savoy, and possessing much of the Savoy character, they have formed small Savoy-like heads which are very useful. In late districts, however, this variety should not be grown, as the others already named are superior.

Some sow the seed of Brussels Sprouts where the plants are to remain, but this plan is not always convenient, and those transplanted from a rich seed bed in suitable weather do quite as well. There is no danger of the sprouts being formed too early and consequently not keeping well, as the hardier and more matured they are before winter comes the better do they keep during severe weather. Growing the plants from 2 to 3 feet apart, and in a good exposed situation, helps greatly to plenty of fine large sprouts being formed.—J. MUIR.

ARRANGEMENT OF PIPES FOR HEATING.—I am always obliged to your correspondents for giving information, but wish they would recollect many of your readers are only learners, and cannot understand unless things are very plainly described. On reading Mr. Duffield's hints on the above I am puzzled to comprehend the following:—"It is obvious, therefore, that the whole of the available rise in the flow, with the

corresponding fall in the return, should be concentrated by fixing the pipes vertically," &c. How and where are the vertical pipes to be fixed he does not say; and how can the rest of the piping be set at a dead level if the flow rises from the top of the boiler and the return enters near the bottom? Will Mr. Duffield kindly make the matter plain to—A NOVICE.

ROUND THE VINERY IN MARCH.

IT may interest some of the readers of this Journal to be taken in imagination into an early vinery at one of the most interesting periods of the year, and to go round it with me, as I generally do in *propria persona* after breakfast every morning. The house is an old-fashioned one, heated by two flues—one in front, one behind. A large Pine pit occupies the centre, no longer used for Pines but filled with spent tan. It is about 32 feet long, 6 feet high in front, and about 12 or 14 feet high behind; width 12 feet. The Vines have been forced early for several years with variable results. They are planted outside with no inside border, but outside they are always carefully covered with a good coating of leaves in autumn. With regard to the composition of the border I know nothing, but have serious doubts as to whether it was judiciously made. I cannot at present alter it, consequently it has been my object to draw the roots upwards as much as possible by attracting them with dressings of bones, guano, and well-decayed manure. This year I hope to apply a dressing of soot, lime, and charcoal, as well as bones and manure. The produce has been far from what it ought to be, but the Vines give promise of doing better in the future, as they appear strong and healthy with more vigorous shoots and larger leaves than they have ever had before.

My object is not merely to grow Vines but to enjoy an early vinery to the utmost. We will begin at the warm end, where a drop of water hisses when it falls upon the flagstone just above the fire. We are obliged to keep it as hot as this to secure 60° over the house. In this corner are several specimens of *Eucharis amazonica* looking very healthy, one of them just now in bloom, and therefore to be taken to a cooler place. Just beside the *Eucharis* a fine bulb of *Amaryllis Johnsoni* is throwing up a good bud. This is the first time we have succeeded with the *Amaryllis*, simply from not having sufficiently ripened the bulb heretofore. It has been left dry over the hot stones this winter. Further on in the angle is a plant of *Dendrobium nobile* flowering beautifully and making fine growth; close to it a *Cypripedium barbatum*, also strong and healthy but not flowering. The flue is now not so hot, and we come to a collection of *Cyclamen persicum*, a little drawn for want of air but still doing well, some in flower others in bud. Here are some pots of an especial treasure, *Zephyranthes carinata*, the Flower of the West Wind. This is a delightful bulb, giving so little trouble and so much pleasure. Turn them out in their pots in summer till their foliage dies down, lay them on their sides on some shelf afterwards, place them in a hot corner with plenty of water in January, and you will soon have abundance of their beautiful delicate rose-coloured flowers with bright green leaves around them.

Along the front light are a number of Roman Hyacinths, which flowered in November and are now being experimented on to see whether they can be made to do good work next year or not. In the cool corner there are some plants of *Vallota purpurea*, which are certainly not doing well. They are placed in the corner as a hospital to recover from a consumptive attack, probably the result of injudicious potting. In the back corner in a large pot on the ground is a plant of *Hedychium*, which has fine reedy foliage, but is so shy of flowering that I have only once succeeded in inducing it to produce its Orchid-like blossoms. On the back wall is a long row of stately *Richardias*, which after flowering constantly for months have been removed into the greenhouse as the heat was too great, and they were in the way for tying the Vines overhead. On the low wall of the Pine pit stand, as a grand decoration at each end, two magnificent plants of *Corypha australis*, on the lower corners two much smaller plants of *Calamus asperimus*. The intervening space is filled on the upper side with *Camellias* which have done flowering, and are being forced on now to make them flower early next year. I find they do best without any peat in good turfy loam with plenty of sand, and that they like a good mulching in spring, or to be supplied with liquid manure. *Dracenas* are put here and there among the Ferns on the low wall, and always look well. The beautiful and easily grown *Pteris tremula* delights in the heat, as does also

the *Asplenium marinum* which once greeted the waves dashing on the shore on the south coast of Devon.

The only plants which have been at all injurious, so far as I know, to the Vines are a group of *Azaleas*, which occupy the pit, standing on the spent tan. The attacks of thrips on these plants are irresistible, and the pest soon spreads, and does terrible mischief to the Vines above. For some years I discarded them, but I missed them so much that I have re-introduced them, cleaning them with an occasional dip in Gishurst compound mixed in warm water; nevertheless I expect some mischief, but the gorgeous flowers have been, and are, splendid. I have neglected in my walk to notice the boxes of Mustard, which are regularly kept growing for the table, and also the huge pot of that Belgian salad the Whitloef, which is most useful and palatable at this season.

Such is my vinery. It does not take long to walk round it; but everything in it has a special interest, and the whole is a "happy family" of plants, agreeing fairly well together. Of course the greenhouse close at hand has from time to time to be used to keep some of the plants healthy and to give them rest, but no one could attempt to force, as I do, without such a second house to fall back upon. It certainly adds very much to the pleasure of a vinery to grow in it a variety of different plants, notwithstanding the slight evils which may be the result.—A GLOUCESTERSHIRE PARSON.

THE WOODS IN A STORM.

THERE is no time when our woods are not beautiful. Let the elements rage and war; let the south-west wind be roaring and the rain descending in sheets; let the snow be falling in great flakes, and all the face of Nature be bathed in a white mist; let the equinoctial gales carry with them all sorts of disaster, still our woods present features, not only of interest but of beauty, to the eyes of those who are content to look closely into the face of Nature.

We have lately been having some of the wildest weather that can be imagined. Torrents of rain have swollen our streams till what was a tiny brooklet, which old Horace used to describe "as gently nibbling the banks," is now a raging torrent, and our rides are strewn with the *débris* of broken branches, and at each step we kick against a branch or twig. The grass of the rides, too, is so soaked with rain that even in those which are best drained the feet sink into mire and bog. And yet I assert that even under these circumstances the woods are lovely.

If you doubt it, my gentle reader, come with me now, as the rain has just ceased, and look at the woods. Perhaps it is very fanciful, but as I look down on them from rising ground they appear to be in the sulks. Somewhat they remind me of a lovely child, perhaps a little spoilt, who has been offended or crossed. The features are no longer brightened with laughter, but a sort of angry gloom pervades them, and yet we know that most likely with one kind word or caress the gloom will vanish. So it seems to me with our woods in the intervals of a winter's storm. Look at those forest trees as they line those banks, tier above tier, like some vast amphitheatre of Nature. See what a halo hangs over them. The mist is just rising; here are Oaks with a sheen of cold steel grey bathing their spray, while the branches of the Birches are clothed with quite a different garment—a pall of purple it may be likened to. The sober but still warm colour which is peculiar to those trees makes such a charming contrast to the Oaks; while on our right we see a line of fine Alders and Ash trees which present to us quite a different shade of grey. Then in the foreground are the Hollies and the Ivy-clad trunks of the veteran Oaks, which furnish the dark green tints that are so serviceable in winter; and whilst we gaze the angry scowl that appears to have settled on the face of Nature seems to give way to some kinder softer impulse. The clouds lift for a moment, the air becomes lighter, and a ray of sunlight—fleeing indeed, but how beautiful!—comes dancing along. First it bathes the Oaks with its reviving beams, and the scowl vanishes like magic, the spray is lit up by numerous and varied prisms of colour; next it touches the Beeches, and they (surely we may say it) laugh and sing. Then it claims the Hollies and Ivy for its own, and the wax-like leaves gleam in the sunshine. Next, let us notice what a charm each branch—each twig, yea, each leaf of the evergreens—has; for after such heavy rain they are all charged with moisture, and as the sunshine goes dancing along it seems to be scattering diamonds on every tree. Surely, then, we may say that even in stormy weather the woods have

a charm of their own, which is scarcely second to any other season.

But now we are in the woods, and as we hasten to go to some favourite spot the sunshine is chased away by the stormy change of the winds, and once more the woods are in gloom. But is there no other charm remaining? What is that musical sound that reaches our ears, louder perhaps than we have noticed for some time, but still so melodious? It is the sound of falling rushing water. We hurry on to our favourite stream to find it indeed in commotion—rushing, bubbling, leaping; now roaring, as some stone or tangled grass prevents its free course; now gliding along in a swift stream, singing its own jubilant theme; now tumbling down one of Nature's tiny waterfalls with a rush and a roar quite foreign to itself. And in spite of its swollen waters look how clear the stream is! You can see easily to the bottom at all parts of its course. Are you afraid of wet feet? No? Then let us follow the brook from its source to where it leaves the woods. Ah! what a lesson in landscape gardening does this stream afford us! Never for above a yard or two does it pursue a straight course—turned to the right or left by some root it may be, or some hidden cause, twisting and bending, ever following charming curves, never the same; here tumbling over a fallen branch, there burrowing under the ground for 20 yards or so, and, when you think it has disappeared altogether, suddenly bubbling up at your feet, racing along, dancing and singing to the very end of the wood, where from a lovely gorge it bounds into the open fields.

But before we say farewell to it let me try and describe to you the spot where it leaves the wood? We are in a gorge. The banks are about 14 feet high on each side, lined on the left by a magnificent group of Holly trees, and on the right by Alders, Hazels, and Broom flanked by Hollies and Oaks. Just before the stream makes its final exodus it comes over a tiny waterfall which it has made. Here is indeed gloom, but such shelter! Can you imagine a more charming retreat on a hot summer's day? The Hollies on the bank furnish us with a summer house where we can lie on the ground and listen to the murmuring brook. But now in winter's storm it is equally useful, for as we are admiring the scene the rain again descends, and we seek their welcome shelter, and only a drop or two may pierce our armour; nay, we may do more, for we can enjoy its music. "Music in rain!" someone may protest; "surely this is a figure of speech, unmeaning and untrue." Not so: anyone with a love for music or who can understand musical sounds will find much sweet music in a shower of rain, particularly when sheltering under a tree. Some of our great composers have tried successfully to imitate the fall of rain. May I give as an instance the last act of Rossini's "Il Barbiere," where Count Almaviva comes in the midst of the storm to carry off Rosina from her jealous guardian's house. Ah! there is indeed music in rain, as indeed there is in every other adjunct of Nature, and we may stay here safely and enjoy it till the worst is over. The winds, too, listen how they roar. Do not the loud growls of the double basses and cellos in the storm in Beethoven's Pastoral Symphony well depict the anger of the winds as they tear along over our shelter, and add their deep diapacons to the dulcet clarabella of the rain? Ah! they are subsiding now, and the rain is not so fierce. As the music becomes fainter and the measure slower another voice is heard, as sweet and far more tender than we have had yet. Listen! Just as the storm is subsiding from that distant Holly tree a thrush lifts up her voice and floods the whole scene with such music as Jenny Lind in her palmiest days might in vain strive to emulate.—WYLD SAVAGE.

ESTIMATE OF SUMMER AND EARLY AUTUMN PEARS.

As the interest taken in the different kinds of Pears seems to be on the increase I venture to add my own experience, which began very early in life at Holme Pierrepont in Nottinghamshire, which is one mile from the river Trent, on a fine sandy loam with a gravelly subsoil. My father had a very large collection of Pears grown on walls, espaliers, as bush fruit, and standards. Nearly all the best varieties then grown are still favourite fruit. Our season began with the old Green Chisel, followed by Dearborn's Seedling, Doyenné d'Été, and Citron des Carmes. Of these Citron des Carmes was decidedly the best, and it is so also with me at Appleton in Yorkshire, and also at Tockington in Gloucestershire in quite a different soil. My soil at Appleton is a darker loam, but still on sand and

gravel. There I find close and constant pruning is the true way to insure good crops of Pears. Citron des Carmes is much better as a bush than on a wall. Doyenné d'Été is no great favourite of mine; it soon gets sleepy, and is in my opinion overrated.

The next in succession are Flemish Beauty, Madame Treyve, Williams' Bon Chrétien, Beurré de l'Assomption, Souvenir du Congrès, Fondante d'Automne, and Beurré d'Amanlis. I do not know Beurré de Cuerné. It is rather difficult actually to place them in order. I consider them in the north September and early October, in Gloucestershire and Worcestershire end of August and early September Pears; but with me Madame Treyve promises very well, and to be early. Williams' Bon Chrétien comes next, on espalier or bush; but Flemish Beauty, which is worthy of a wall, will be quite as early. Beurré de l'Assomption is undoubtedly good, and if anything forwarder than Beurré d'Amanlis or Fondante d'Automne. I like the latter better than Beurré d'Amanlis, which is uncertain and varies much in soils and positions. Souvenir du Congrès is undoubtedly a fine Pear and a free grower, but my experience with it yet is limited; but when I have seen it exhibited—and I have seen it too on the continent in great perfection—I have but little doubt of its being a great acquisition, just as Doyenné du Comice promises to be.

The later autumn varieties, commencing with Louise Bonne of Jersey, I will refer to on a future occasion.—C. P. P.

THE ROLL CALL.

MR. E. MAWLEY, who works so hard for the benefit of lovers of the Rose, tells us in the new "Rosarian's Year Book," that the Roses in the northern and west midland counties of England suffered the most during the winter of 1878-9. I presume that the past winter of 1879-80 has been as severe as the previous one. As an amateur west midland grower of about 1200 plants I will give my experiences. All northern and midland Rose-growers are anxious to find out which are the hardiest among the best of the queen of flowers. I bought in and planted last November about 650 Hybrid Perpetuals, the fifty roughly representing the standards. The last of these were planted about a week before the severe frost set in. The beds were well mulched. In addition I had about fifty Tea Roses, and these I planted at once ("How rash!" many readers will say) at the front of a south wall and south Privet hedge.

Mr. George Paul writes about the "Survival of the Fittest." As those are the fittest which survive, let me give the experiences of one who has many times registered during this winter 30° and 32° of frost. Among the Teas and Noisettes I planted are now to be found alive and looking very healthy Anna Ollivier, David Pradel, Catherine Mermet, Maréchal Niel, Mesdames Willermoz, Camille, Lambard, Welch, and Bravy; Perle des Jardins, Aline Sisley, Jean Ducher, Marie Van Houtte, &c. I carefully protected the heads with fern, and in mild weather removed the same and opened the mulching. Madame Lambard appears to be very hardy. One has no need to apologise for the hardiness of Homère, Sombreuil, Comte de Paris, Bougère, Caroline Kuster, Belle Lyonnaise, Céline Forestier and such like. Madame Berard and Gloire de Dijon seem quite as hardy as the hardiest Hybrid Perpetual.

I headed this paper "The Roll Call," so I will finish with the Call. Only two out of upwards of 1200 have failed to answer to their names—a dwarf Souvenir de la Malmaison, a standard Ferdinand de Lesseps, both bought in last autumn. Not one Tea have I lost. However, I must confess to many very brown stems in my rosarium. But beneath the warm mulch I can see healthy green wood with plump swelling buds. The great offenders are Reynolds Hole, Comtesse d'Oxford, Marie Finger, and Henri Ledechaux. I find that the plants I bought in from the south-west (Torquay) have stood the winter most bravely, their buds are now swelling to the very tips of the shoots. After a careful examination of all my Rose trees this last week of February, 1880, I am compelled, on seeing some of my hardy shrubs in sackcloth and ashes, to disagree with your correspondent "C. P. P." when he declares that there is no such thing as a hardy Rose.—J. A. W.

SPIDERS.—These may certainly be considered friends of the gardener, for if their webs disfigure plants and walls they destroy a large number of insects. In the "Entomologist" the Rev. O. P. Cambridge, who is an authority upon spider history, remarks that the season of 1879 was unfavourable to the race.

He says, "Excessive moisture combined with an unusually low temperature and absence of sunshine is exceedingly hurtful to many spiders." In several groups, the Epeirides for instance, these creatures have suffered not only from the weather but from a scarcity of insect food. He noticed, for example, that the females of Epeira quadrata, which in average seasons attain the length of about an inch, were last summer not more than three or four lines. The probabilities are that spiders will also be few in number during 1880.—J. R. S. C.

THE CULTIVATION OF THE PEA.

THE PEA (*Pisum sativum*) belongs to the family Leguminosae. The period of its introduction into this country is not known, but it is thought probable that it was introduced into Britain from the warmer parts of Europe, and that those countries may have originally obtained it from Egypt and Syria. It is known in India and China, but it is not very plentiful in those places, and there is no evidence of its being a native plant. It is more abundant in the Japan Isles, the climate and soil of which suit it better.

History records that in the time of Queen Elizabeth Peas were brought from Holland, and were considered great luxuries on account of their having been brought so far, and even in the reign of Henry VIII. Peas were very scarce.

The Pea during the summer and autumn months is one of the chief vegetables grown for the table, therefore all the attention possible should be given to its cultivation. The ground where it is intended to grow Peas should be well dug and liberally dressed with good and well decayed manure, or the ground may be trenched as early in the winter as possible. Choose a warm border of moderately light soil for the first and second sowing, but for the main crops the ground may be rather heavier, especially if it is a dry season. For my main crops of Peas I commence by marking as many rows as are required 12 feet apart. Trenches are then taken out 15 to 18 inches wide, similar to Celery trenches, breaking the bottom up well, upon which is placed a good layer of the best manure we can obtain; finally all the soil is levelled down evenly. I always plant Celery between the rows of Peas, therefore the trenches are all prepared at the same time. This plan answers well for two reasons—first, by allowing a good distance between the rows the air and sun can reach both sides of them, therefore a more abundant crop is obtained; secondly, from the manure penetrating the roots they are not so easily affected by drought. I strongly recommend this system, because if Celery is not required any other moderately dwarf vegetable may be planted between the rows. No fixed date can be given for sowing Peas in the open ground, as much depends upon the state of the soil and weather. When in the south of England I used to sow about the second week in December, but I think the last week in January is soon enough to commence in this neighbourhood. For the earliest crop I recommend sowing in boxes. I employ ordinary cutting boxes, which can be made of any suitable shape or size. Fresh turf is placed grass side downwards in the boxes, we then run the knife down the centre, so as to have two rows in each box. A small drill is then made to sow the Peas in, which are covered with good loam and a little decayed manure. The boxes are placed in a vinery or Peach house until the young plants are about 2 inches high, when they are placed in a cold frame to harden off. If a border has been prepared as advised, take a trench out wide and deep enough to receive the turf, planting in rows 3 to 4 feet apart, drawing a little soil round the stems and stake at once. It is also well to place a few branches of evergreens at each side to protect them from the winds.

In sowing Peas first draw a neat drill with the hoe about 4 inches wide and 2 inches deep, then sow evenly and not too thickly. I sow one quart to every 40 yards. The first and second sowings may be made in rows 3 to 4 feet apart, but let the other sowings be 10 to 12 feet as before advised. Sowings should be made about every fortnight according to the demand until the end of May. As soon as the plants are well up loose no time in earthing, and stake at once, employing tall sticks, as the higher the plants grow the better the chance of a full crop.

Mice are very troublesome, and they do great injury to the crops. Traps must be kept constantly set, or poison should be placed on the ground. Cocoa-nut fibre sprinkled along the rows is also in some measure a protection. I have also steeped the seeds in paraffin before sowing, which to a great extent stops their depredations. Birds are fond of picking the young growths, but their depredations may be stopped by suspending

in the rows, cotton, pieces of paper, feathers, or glass. A dusting of soot when the plants are damp renders them very unpalatable to birds. My kitchen garden is near a wood, and the Peas have to be regularly protected with nets. If mildew appears, syringe well and dust with sulphur.

The varieties of Peas are now very numerous, and a young gardener is often at a loss which to select. There may be a few new good varieties, but it is always preferable to grow an old and reliable variety than a new one and be disappointed. Those sorts I grow chiefly are Dickson's First and Best, Kentish Invicta, William the First, Little Gem, Supreme, Dickson's Favourite, Prince of Wales, Maclean's Premier, Dr. Maclean, Allen's Champion, Hundredfold, C. F. Wilson, British Queen, and Veitch's Perfection. Some of these might be considered of inferior quality, but my employer does not like sweet Peas. Dickson's Peas suit him best, these rarely fail to give us a good supply during the season.—R. HALL, *Gardener to Mark Firth, Esq.*—(Read at one of the *Sheffield Gardeners' meetings*.)

HARDY FLORISTS' FLOWERS IN IRELAND.

(Continued from page 135.)

Carnations, Pinks, and Picotees.—For those who are anxious to secure something new among their stock of Carnations any time within the next month would suit to sow seed. Those who like collections of as many different varieties as possible generally endeavour to obtain pipings or cuttings during late summer. These pipings, if properly trimmed and inserted in sandy loam, are in most cases rooted before winter. Propagation from established plants either in pots or in beds is more safely done by means of layers. During a few excursions in the autumn I procured pipings of many rare and new varieties which I inserted in boxes placed outside. They have received no protection except dry hay in the severe frosts of December. When transplanted in the first week of February to the flowering beds two-thirds were rooted; those that were not I placed in a frame on a mild hotbed, and they now seem to be progressing rapidly. With this cool treatment I did not lose a single cutting or offset. We find it so easy to grow those beautiful flowers in this locality, and indeed in every part of Ireland, that you rarely find them grown except as bedders, and Tree Carnations make excellent greenhouse and window plants. I have found L'Alegatière and Miss Joliffe the best for this purpose.

Ranunculuses.—It is much to be regretted that these fine old florists' flowers are not oftener found in collections. The Turban variety did remarkably well with me last year in richly manured beds of sandy loam, with a southern aspect. Others, even better, I grew in window boxes, and a lady visitor compared them to small Dahlias. I planted some French varieties in January both in pots and boxes and in well prepared beds. All are now well established and doing remarkably well. As to the non-injurious effect of extra moisture, I may note that there has been here an almost unceasing down-pour for the past week. For days they had been saturated, but seem to luxuriate in it; nothing could appear healthier than the foliage. I shall therefore have blooms six weeks before those who are only about to plant now. Had the season come more severe I should have protected those in the beds or boxes. Full and perfect ripening of the tubers one year is to my mind the best guarantee for success in the following year. If carelessly allowed to remain in the ground to make new growth when the foliage is decayed, success the following season is seriously risked.

The Hollyhock.—This is another hardy old favourite which it is to be hoped will never be wholly forgotten. I prefer growing them against the walls behind the borders, where they can be loosely tied and protected from gusts of wind. They are, under certain circumstances, when well grown and clothed to the base with foliage, very decorative as centres for beds or borders. If propagation was neglected last summer, it is not yet too late to take offsets; if rooted so much the better, and start them on in a cold frame or slight bottom heat. Transplant as soon as well rooted into a rich deep soil, not liable to become very dry during the summer months; a border shaded by trees without the roots extending where the plants are growing is suitable.

Dianthus.—In a former number of the Journal I compared the beautiful D. Heddewigii with many others often preferred to it, and I tried to show it was much superior to any of them in beauty, shape, and usefulness, either single or double. Some

prefer the single forms, such as Eastern Queen or Crimson Belle, to the double variety diadematus flore-pleno. Both varieties have the floral edges beautifully fringed or serrated; while in the former the colours are in most instances in broad bands circled, and in the latter the colours while arranged in zones are deeply striped and of most varying hues. The former comes true from seed. When I obtain an excellent variety of the latter I propagate and retain it by means of cuttings or pipings. When once grown their great beauty will be their strongest recommendation.—W. J. M., *Clonmel*.

GALVANISED WIRE.

FURTHER experience will, I imagine, convince your correspondent "Essex" that he has been too hasty in his surmises regarding the effect of galvanised wire on Peach tree shoots. That cold may have something to do with it I have fancied more than once, thinking that the cold wire conducted the heat away from portions of the shoot which it came in contact with till it paralysed it and killed the tissue thereby, and the shape and nature of the wound bears out this idea; but I do not believe that "frost-bite," as the term is understood, is the cause, as in the late Peach house mentioned in a previous communication of mine no frost had ever entered, many tender plants besides Peaches being in the house, and yet the destruction worked was only less than that outdoors, and very great. Since, however, the same wires have been painted with three coats of paint no injury has been done. I have just pruned the same trees and looked carefully over them, and find no injury has been done to a single shoot. In this house in former years the trees were tied to a painted common iron trellis, and in one division to unpainted copper wire for a dozen years or more, during which period I never saw an injured shoot, otherwise the conditions were always exactly the same. As to tying the shoots with matting in such a way as to prevent them coming in contact with the wire, and as has been suggested over and over again, it is that kind of advice which shows how little practical acquaintance the writers have with the subject. You can keep a shoot off the wire by that means where it is tied, but on a curvilinear trellis where the trees are trained under the wires, or even on flat trellises where the shoots have grown both above and below, I should be glad to be informed how the shoots are to be prevented from touching the wires by such means except at greater trouble and attention than any one is prepared to give. The "spring" of the shoots presses them against the wire in various ways where there are no ties, and I do not believe in tying the shoots at every wire. Painting is a safer and shorter plan for preventing the injury.—J. SIMPSON, *Wortley*.

IN reply to your question, "Have our correspondents noticed the effects of galvanised wire both in summer and winter?" I may say all the injury I have seen has been to the young shoots of fruit trees in spring and summer; where the young shoots touched the galvanised wire they became black at the point of contact and stunted. I believe there is galvanised wire and galvanised wire, and that the only safe plan is to do as I have done in my orchard house—i.e., substitute charcoal wire for galvanised and give it a coat of paint. I believe frost and heat have nothing to do with the matter, it is simply the method in which the wire is galvanised. Some find no disadvantage, some do; therefore discard galvanised wire and use charcoal wire painted.—PHILIP CROWLEY, *Waddon House, Croydon*.

I HAVE had considerable experience with galvanised as well as ungalvanised wire in every form that is general for the training of fruit trees and climbing plants both out and indoors. That galvanised wire is injurious to all plants which are brought in contact with it, is, in my experience, beyond doubt. It is now nearly ten years since my attention was drawn to its injurious effects on Peach trees. I was then foreman in the gardens of Hopetown House, near Edinburgh. The Peach range had received an additional house to its length. In this house the young trees grew very strongly the first two years. If my memory serves me, it was at the end of the second year after they were planted that while we were undoing the trees, preparing for washing the woodwork and trellis, that we observed there was a black spot on nearly every shoot where the wood rested on the wire, the gross shoots being the most affected. As a preventive each tie was twisted two or three times round the wire to prevent the shoots from coming

in contact with it, but the effect was only temporary, for with syringing and disbudding most of the shoots were shifted, and matters became as bad as ever. Since then I have had a *Lapageria* and a *Clerodendron* on galvanised wire trellises, and notwithstanding every care shoot after shoot would keep dying off, just like what we often see in Apricot trees in summer. At last these trellises were discarded, and the plants became vigorous. Last winter I lost two Nectarine trees which during the previous two years had borne fair crops and seemed healthy and well, with the exception of some spots where the shoots touched the wire. My next-door neighbour, who had a very fine wall of Peach trees two years ago on a due south aspect, nearly lost them all last winter. They are trained to unpainted galvanised wire.

That whitelead paint is a certain preventive of the injury in question I can prove from the fact that we formed a wire trellis for espalier and cordon Pears three years ago which received only two coats of paint, and on examining the wood a few days ago I could not find a single symptom of injury, while there is more or less on all other espaliers where galvanised wire is employed. Our Raspberry canes are trained to wires that are not galvanised, yet they injure the canes to such an extent that we have had to paint them, so that I find ungalvanised wire without paint is less or more injurious, even if the canes are not tightly tied. I am of opinion that it is the rust which gathers on ungalvanised wire that causes the injury to trees; paint of course prevents it gathering.—H. ELLIOTT, *Liverpool*.

On page 119 I observe that Mr. Woodcock states we were taking out the galvanised wire from the Peach house and substituting copper wire. This is scarcely correct. We have not taken any galvanised wire out, but merely painted it over with white paint, which I believe will prevent the damage done by the action of electricity. Other houses just erected we have wired with copper wire.—JAMES KEELING, *Gardener to D. Ward, Esq., Mount View, Sheffield*.

NOTES AND GLEANINGS.

WE learn with much regret that a cable message has been received announcing the **SUDDEN DEATH OF MR. W. H. DUNNETT, JUN.** (the son of the senior partner of the firm of Messrs. James Carter, Dunnett, & Beale, of 237, High Holborn). He died at Melbourne on the 23rd ult., where he had gone in the hope of re-establishing his health. The deceased gentleman, who was only thirty-two years of age, was highly esteemed by those who knew him for his many excellent qualities. He was a most energetic man of business, and a career of great promise is cut short by his early death. Much sympathy is expressed with Mrs. Dunnett, who accompanied her husband in his search for health, and who now mourns his loss alone in a far-distant land.

— IN the Royal Horticultural Society's Gardens at Chiswick there is still a very good display of **PRIMULAS**, although some of them are slightly past their best. The double varieties, of which a large number are being tried, are flowering very freely, particularly the old Double White. Some of the best are Miss Eva Fish, flowers large, fimbriated, of a bright lilac purple tinge, very distinct; Blushing Beauty, also a good variety, the flowers being faintly suffused with lilac; Lilac Queen, colour a pale purplish lilac, good flower; Rubra grandiflora, flowers small but full and compact, of a bright purplish crimson shade; Alba plena fimbriata, of very free-flowering habit, the margins of the corolla being slightly fimbriated. The most noticeable of the single varieties were Chiswick Red and Rubra violacea, the colour in the former being remarkably bright and clear.

— IN another house several specimens of **IMANTOPHYLLUM MINIATUM SUPERBUM** were flowering. This is a great improvement on the ordinary form, the colour of the flowers being much richer and deeper—almost orange scarlet. When plants of the species and this variety are placed side by side the difference in colour is remarkable and greatly in favour of the latter. In the same house *Abutilons* are again commencing to produce their flowers. The best varieties were the following:—*White*, Seraph and Boule de Neige. *Yellow*, Reine d'Or and Lemoiné. *Orange*—La Lorraine, Prince of Orange, and Chinoise. Several of Mr. George's varieties are also being tried, most of which appear to flower very freely, and include some good colours.

— IT is surprising that the species of **PELARGONIUMS** are

not more generally cultivated, for the leaves are not only extremely fragrant, but many of the species bear pretty though small flowers, and there is great diversity in the forms of the leaves, many being very elegantly and finely divided. All the species thrive in a cool temperature such as that of the greenhouse—no mean recommendation. The following selection includes some of the most distinct forms:—*Denticulatum*, *quercifolium*, *Blandfordianum* *pencillatum*, *crispum*, *crispum* *major*, *viscosissimum*, *pulchellum*, *betulinum*, *ternatum*, *citriodorum*, *minimum*, and the varieties *Countess of Devon*, *Lady Maitland*, and *Miss Gibson Craig*.

— AMONG many other plants that are well grown at Mr. Kinghorn's Nursery in Richmond, **PALMS** now receive special attention. Some thousands of these plants are grown every year, comprising the most ornamental species of *Coryphas*, *Latanias*, *Coccos*, and *Seaforthias*, and with liberal treatment in respect to heat and moisture are quickly brought to saleable size. *Fuchsias*, *Pelargoniums*, *Azaleas*, *Camellias*, *Heaths*, and the ordinary bedding plants are also extensively and successfully grown. One batch of *Fuchsias* (Mrs. Marshall) were remarkable for their extreme vigour, the leaves being not only of great size but of good substance also.

— A **USEFUL** evergreen shrub for decorative purposes, and one that is by no means so generally grown as it deserves to be, is **EURYA LATIPOLIA VARIEGATA**. It is of free growth, and one of the most distinct of variegated foliage plants, very dark glossy green and creamy white being contrasted in the leaves. A soil composed of peat, loam, and sand suits it admirably, and in a greenhouse temperature it may be grown to a good size. It is allied to the Tea shrub, and is a native of Japan. We observed that Mr. Kinghorn had a number of plants of this shrub in excellent condition.

— IN the Orchid house at Kew a remarkably handsome specimen of **DENDROCHILUM GLUMACEUM** is now in flower, bearing more than three dozen long elegantly drooping spikes of flowers, and the delicious fragrance they exhale perfumes the whole house. *Dendrobium primulinum*, the pretty pale blue *Vanda coerulescens*, and the orange-coloured *Mesospidium aurantiacum* are also in fine condition.

— SEVERAL pretty alpine **SAXIFRAGES** are flowering in the new rockery in the herbaceous grounds, the most noticeable being *S. Burseriana* with its pure white flowers; *S. Rocheliana*, an Austrian species with smaller flowers than the former, but very compact in habit; *S. oppositifolia*, the English purple Saxifrage, and its varieties *pyrenaica* with larger flowers, and *flore-albo*, a white form. On the old rockery the diminutive *Cyclamen coum verum* is bearing numerous purplish-crimson flowers.

— ON the rockery at Chiswick several little nooks and corners are rendered bright at the present time by the flowers of the single and double red and blue **HEPATICAS**. These pretty little plants are amongst the earliest to flower on the rockery; and in conjunction with the elegant Saxifrage, *S. Burseriana*, also now flowering, they impart a vernal beauty to that interesting portion of the garden.

— A **GRADUAL** re-arrangement of the **SHRUBBERY BORDERS** AT BUXTED PARK is being carried out by Mr. Prinsep, and considerable progress has been made this winter. The shrubs, mostly fine specimens, had become crowded and were encroaching upon the paths. They have been thinned and set back sufficiently from the sides of the paths to afford room for several years' growth. These marginal spaces have meanwhile been very happily turned to account as a temporary home for a collection of young plants of Conifers and shrubs, including all the latest novelties, making the borders doubly attractive, and imparting a novel and not undesirable aspect to an old shrubbery.

— THE **HORSHAM ROSE SHOW** is fixed for June 29th. Mr. W. H. Sadler, Rock House, Horsham, is the Honorary Secretary.

— AN uncommonly neat and finely coloured variety is **AMARYLLIS DR. MASTERS**, for which Mr. Williams of Holloway obtained a first-class certificate last year at one of the Royal Horticultural Society's meetings. The flowers are about 6 inches in diameter, of good substance, and of a bright carmine scarlet colour without the faintest green tinge. One valuable character of the variety is the freedom with which small bulbs flower. We lately saw some at the Paradise Nurseries flowering well in 48-size pots. It deserves to be generally grown as one of the best in commerce.

— WE are pleased to observe that the first annual report of the CATERHAM HORTICULTURAL AND COTTAGE GARDEN SOCIETY shows a healthy state of the finances, there being a substantial balance on the right side on both the general and exhibition funds; this is indicative of prudent management, as losses were incurred last year by many exhibitions. The Society in question appears to be well supported, and its Committee is composed of practical gardeners. Papers are read periodically at the meetings, and a desire is apparent to improve the horticulture of the district and to widen the interest in gardening pursuits, a work in which we wish all who are engaged much success.

— MR. BROTHERSTON contributes the following note on POTATOES—"I have grown *Magnum Bonum* two seasons, and the pig is the only Potato eater that will have anything to do with it; *Scotch Champion* has been in daily use with us through the winter. It is a coarse, yellow, and sweetish Potato, which will not be much wanted in good Potato seasons. It has brought £40 per acre on the home farm here, but both *Regents* and *Victorias* were failures. It is not a garden Potato at all. There are very few of the newer varieties really worth attention for culinary purposes."

— THE thirty-sixth annual Exhibition of the SCOTTISH PANSY SOCIETY will be held in the Calton Convening Rooms, Waterloo Place, Edinburgh, on June 18th. There are sixty-seven classes for Pansies and Violas. In addition to the Society's prizes several special prizes are given by patrons of the Pansy, and a silver cup will be awarded to the competitor who takes the greatest number of prizes.

— MR. JAMES PARK, late foreman at Rayners, High Wycombe, Penn., succeeds Mr. Davies as gardener to Mrs. Gwyn, Dyffryn, Neath. Mr. GEORGE WOOLLEY, late foreman at Hallingbury Place, Bishop's Stortford, succeeds Mr. Wainwright as gardener to H. H. Berens, Esq., Sidcup, Kent. Mr. GEORGE BETHELL, Nonsuch Park, Cheam, succeeds Mr. Pottle as gardener to Sir Richard Wallace, Bt., Sudbourne Hall, Wickham Market. Mr. DAY, late foreman at Hutfield House, succeeds Mr. Norval as gardener to the Earl of Galloway, Galloway House, Garlieston, N.B.; Mr. RICHARD SPINKS, Kinlet Hall, Bewdley, succeeds Mr. Matthews as gardener to Lord Henry Somerset, The Priory, Reigate; and MR. ANDREW CAMPBELL, Muckross Abbey, Killarney, has been appointed gardener to Sir Arthur Guinness, Bart., M.P., Ashford House, Cong, Co. Galway.

— MESSRS. CHRISTY & Co. have issued the third part of their illustrated publication, "NEW COMMERCIAL PLANTS." Descriptions are given of the following plants:—*Teosinte* (*Euchlœna luxurians*), the new Fodder Grass, which is said to be so luxuriant, and so eagerly devoured by cattle. *Tagasaste* (*Cytisus proliferus*), a native of the Canary Islands, and there cultivated as a forage plant. It is rich in nitrogenous matter. "Animals fed upon *Tagasaste* come into condition more rapidly, and to a greater degree, than with any other food except corn." The Caucasian Prickly Comfrey (*Symphytum aspernum*), which is said to be so greatly superior to the common Comfrey as a food for cattle. *Maté* or Paraguay tea (*Ilex paraguayensis*), a decoction of the leaves and young shoots of this plant is largely used by the inhabitants of South America as a beverage, which is said to be extremely refreshing. It is estimated that probably 50 or 60,000,000 lbs. of this plant are consumed in South America. *Kola-Nut Tree* (*Sterculia acuminata*), a tropical African tree, greatly prized by the natives. The seeds are "said to support the strength, allay inordinate appetite, assuage thirst, promote digestion, and render those who use them capable of prolonged fatigue." *Coca* (*Erythroxylon Coca*), the leaves of which are used by the Peruvians as a nervous stimulant. *Pitui* (*Duboisia Hopwoodii*), the Papaw (*Carica Papaya*), the Cow Tree (*Brosimum Galactodendron*), and several other plants are also described.

— THE RAMSGATE AND ST. LAWRENCE HORTICULTURAL SHOW will be held on August 11th. The Society has influential patronage, and eighty classes, besides prizes for ladies and cottagers, are included in the schedule. W. C. Barber, Esq., The Vale, Ramsgate, is the Honorary Secretary.

— FROM a lecture delivered by Dr. Schroeder, and published in the *Prairie Farmer*, we cite the following relative to ASPARAGUS FARMING:—"Four years ago Dr. Schroeder found in the vicinity of Brunswick 1500 acres of Asparagus, and 1000 acres near Wolfenbützel. Waggonload after waggonload goes from morning till night to the cities. The crop

begins with the 20th of April and closes on July 24th, consequently sixty-six days of yield. The cutting is done by peculiar knives, and begins early in the morning, again at noon, and lastly before night; that is to say, three times a day every acre is gone over. He saw hundreds of men, women, and children in the fields to do the work. Twenty pounds of Asparagus from 4 to 8 inches long, white like snow, is the average product of an acre daily, or 1320 lbs. during the season; or, for the 2500 acres, 3,300,000 lbs. during the season.

— IN the "American Gardeners' Monthly" a series of articles are being published on the FLORA OF TEXAS which contain many interesting facts. In reference to the flora near the Guadeloupe River the writer observes—"Its chief ornament is the beautiful Cypress, *Taxodium distichum*, 80 to 150 feet high, and 5 to 10 feet in diameter, a tree which likes to stand near the water and send its roots into it. The Cypress trees often stand so close as apparently to form a solid mass of trunks, and the tops to form a solid roof across the river. It is found also on all the tributaries of the Guadeloupe: the San Marcos, the Comal, the Cibolo, the San Antonio, and the Medina. The valleys of these rivers are generally narrow; the largest of them is that of the San Marcos, which towards the east has a width of about fifteen miles. Here we find also Elms, Oaks, Cedars, and Pecan Nut trees. The latter, *Carya oliviformis*, is found nowhere in the State but on the river system of the Guadeloupe. A tall and stately tree with dense top, fond of rich soil."

— WE learn from "Nature" that Professor Schübel of Christiania has recently published the results of many years' observation and experiments concerning the INFLUENCE OF UNINTERRUPTED SUNLIGHT on plants. He finds that the "almost unbroken sunlight of the short Scandinavian summers" has two important effects upon vegetation—viz., intensification of colour and aroma. With regard to the first, experiments were tried with the Wheat, Maize, Peas, Celery, and Parsley, in all of which an augmentation of colour was observed that increased the farther north they were grown. The flowers of such plants as *Epilobium angustifolium*, *Lychnis sylvestris*, and *Geranium sylvaticum*, also acquired a size and brilliancy of tint unknown in more southern latitudes. *Veronica serpyllifolia* and *Trientalis europæa* are found to change remarkably as they go further north, the former from pale to dark blue, and the latter from white to rose pink. The increase in aroma is also extremely marked, but is in fruits accompanied by a diminution of sweetness. "The common Golden Drop Plum and the Green Gage of Christiania or Throndhjem, although large, well coloured, and rich in aroma, are so deficient in sweetness as to seem unripe to those who have eaten those fruits in France or southern Germany." Other observers have noticed that the fruits grown in Portugal, while extremely sweet, possess comparatively little aroma; for instance, the Strawberries cultivated largely around Coimbra are "of great size extremely sweet, but wholly deficient in aroma and flavour." These facts lead Dr. Schübel to conclude that light bears the same relation to aroma as heat does to sweetness.

— DWARF FERNS FOR EXHIBITION.—I notice a mistake as to measurement of *Asplenium flaccidum* on page 132. Instead of reading 9 feet in height it ought to be 9 feet over, measuring from tip to tip of the drooping fronds.—R. P. BROTHERSTON.

SMALL BIRDS.

UNDER this heading you have published two letters, both relating to the injury to the farmers and gardeners by certain birds—sparrows, chaffinches, and bullfinches especially. I do not know whether it ever occurred to either of your correspondents to ascertain the contents of the stomachs of the birds referred to by them, or whether they have ever seen any treatise on the subject; if not, I would call their particular attention to an article by Mr. E. Newman in the "Zoologist" of 1863, entitled "Food of Small Birds," in which he refers to a section of the International Exhibition of 1862, the section being the contents of the stomachs of eighteen different species at different seasons of the year.

As both Mr. Ferguson and Mr. Dod are particularly severe on the chaffinch—the first classing it among those "inimical to the interest of farmers and gardeners," and Mr. Dod refers to it as one of those birds "having no merits to compensate for the mischief they do"—I will, with your permission, copy the food of the bird for each month of the year, which is as follows:—"January—seeds, berries, and kernels of fruits;

February—the same and corn; March—the same and insects; April—moths, flies, and insects of various kinds; May—cock-chafers, grubs, and eggs of insects; June—the same and wild fruits; July—the same and grubs of beetles; August—moths and butterflies; September—eggs of insects, worms, and seeds; October—wood-boring beetles, seeds, and insects; November—seeds; December—the same.”

This section was exhibited by Mons. Florent Prévost, and, as Mr. Newman states, “was prepared and exhibited with the benevolent object of proving that our common birds are more useful than injurious to man, and therefore worthy of protection rather than destruction;” and also calls attention to the fact that “the young of birds are fed almost exclusively on insects injurious to man, and this cannot be detected in the stomachs of the parents; indeed, it would be extremely difficult to demonstrate the enormous amount of the benefits man derives from birds during the protracted period when they are feeding their young. Calculations and figures are very unimpressive, so it is more to the purpose to state the well-ascertained fact that in order to keep a nestling bird in health and strength it must be supplied every day with an amount of wheat-destroying, or vegetable-destroying, or fruit-destroying caterpillars equal to rather more than a third of its own weight.” Between Messrs. Ferguson and Dod’s experience and M. Florent Prévost’s exhibit there appears a wide difference; the latter is supported by one of the best naturalists of his time. The question I wish to put is, Who is right?—W. B. R.

THE WEATHER, AND ITS EFFECTS ON VEGETATION.

SINCE my last communication in connection with the extreme frost in the latter end of 1879 we had 25° of frost on the 20th January, and on the 21st and 22nd of the same month 10° each morning. Since that time we have had exceedingly fine growing weather. Vegetation is considerably in advance of what it was at the corresponding period of last year at this time. Should we be favoured with a continuance of fine weather Gooseberries will be green in a few days. Buds on all fruit trees are showing signs of life, but I am afraid much disappointment awaits outdoor growers of fruit in general, as many of the fruit buds are very imperfect and much of last year’s wood indifferently ripened, owing to the prevalence of dull wet weather and the absence of sunshine during the past summer.

Curled Greens, Leeks, and Brussels Sprouts have stood better with us than last winter. Autumn-sown Onions have nearly all disappeared; last season, although the frost was more continued, we lost none. The same remark applies to Roses; last winter we did not lose one, but this year I fear we have very few alive, although all ordinary precautions were used in the way of mulching and affording protection from frost.

I had a few seeds sent me by a gentleman in New Zealand three years ago. A few of the plants I have tried planted out this winter, amongst them the New Zealand Flax (*Phormium tenax*), this is quite fresh. Cabbage Palms are dead, and I fear the Eucalyptus will not stand our winters, the growth not maturing well during the autumn.—JAMES DICKSON, *Arkleton, N.B.*

PRUNING PEACH TREES.

To Mr. Brotherston’s inquiry, “What is the use of cutting back shoots?” I reply, To keep the lower part of the tree well furnished with fruiting wood, and to obtain plenty of lateral growth for selection, which, be it remembered, by no means involves crowding or the retention of a single shoot beyond what is necessary. Unfortunately what I said about attenuated growth being a result of leaving shoots unshortened is but too true, judging from the trees that have come under my notice. Long and extensive observation and experience enables me to assert positively that really fine fruit is only to be obtained from stout wood well furnished with triple buds. Let this be our test, for it is a very safe one; applying it to trees eight or ten years old, and if they are found to have plenty of such wood I will gladly acknowledge the system of culture to be a sound one. Small shoots with single blossom buds, however well ripened, will not give us fine fruit.

The term “extension system,” in the sense it is used by “J. S. W.,” is calculated to mislead. In point of fact, it is absolutely meaningless as a distinction between shortened and unshortened Peach trees. Assertion of opinion is all very

well, but there is nothing like facts; here are one or two. On January 30th, 1873, I planted some dwarf-trained Peach and Nectarine trees of the usual size supplied by nurserymen, and in September, 1875, some of them had a lateral spread of 18 feet, were 10 feet high, and had borne a fair crop of excellent fruit, yet every shoot had been shortened annually. In No. 755 of the Journal I had occasion to call attention to these trees, and in the same number your reporter also writing about them says, “I will instance a Bellegarde Peach tree on the south wall. It was received from a nursery a small plant three years and a half ago, and it has now a spread of 24 feet, covering every inch of wall from top to bottom, and is laden with fruit.” Yet every shoot had been shortened annually, and let me add shortened intelligently, and not by line and rule; for I am not an advocate of hard pruning generally, but treat each tree, nay each shoot, according to its condition.

It is from having seen so much faulty practice in Peach culture that I am anxious to ventilate this matter. Crowded weakly growths, heavy crops of undersized fruit are by far too common. A system that bears the test of time is not to be discarded lightly. Of the trees which I planted in 1871–2–3, all that have had the protection of glass are still in full vigour, still bear fine fruit, have plenty of triple buds this season, and let it not be forgotten that they were in full bearing two and a half years from the time of planting.—EDWARD LUCKHURST.

USEFUL PALMS.

PALMS are extremely useful for all decorative purposes in the greenhouse, the hall, on the table, or for exhibition. In the case of a group of foliage plants for the last purpose what is more valuable for producing graceful effect than a good selection of Palms? The value of these plants for such purposes has attracted the attention of nurserymen, so that now there is no difficulty in obtaining a very beautiful collection of species at very moderate prices. Palms possess many characteristics which are favourable to their becoming even more extensively employed than they are at the present time. There is such gracefulness of form, adaptability to various temperatures, and durability of beauty. In fact if we enumerate all the uses of Palms we must not forget to add the Tamil poem which gives upwards of eight hundred uses for a single species. For the decoration of the table and hall there are very many valuable kinds now obtainable, and their foliage possessing such a cartilaginous epidermis enables the plants to withstand a large amount of ill-usage in the form of low temperature, gas, neglect in watering, and a host of other evils. I have nothing to say here about the cultivation of Palms, as that is so simple and the readers of the Journal are so well acquainted with it, but wish to remark upon a few species which I know to be both exceedingly ornamental and useful.

Arcoa Baueri.—This is a very handsome species. Native of Norfolk Island, where it forms a very striking object in the scenery, and in a young state it is very effective and easily grown. The leaves of the young plants are indistinctly pinnate, beautifully arched, of a deep green colour. The seed of this species readily germinates, and the plants will succeed in a comparatively low temperature.

A. crinita.—A much-esteemed species. Native of the Mascaren Islands. The leaves are distinctly pinnate with numerous pinnae, finely arched, with large sheathing petioles which are thickly set with sharp black spines. This is a very distinct and desirable Palm; it is very graceful, and it enjoys a stove temperature, but may safely be employed for all decorative purposes.

A. Verschaffelti.—Young as well as old plants of this species are extremely handsome, and if convenient it is well worth growing as long as possible. When the plants are 4 or 5 feet high they are most effective. The bright orange midrib is a very distinctive mark. The leaves are pinnate with numerous pinnae, very narrow and gracefully curved, as well as the entire leaves. It is a native of the Mauritius, and requires stove heat. For exhibition this species is invaluable.

Brahea filamentosa.—A very distinct and elegant species. It is found in a more northerly direction than any other Palm of the western hemisphere, as it grows in abundance on the borders of the Colorado, consequently it is well suited for growing in our cooler houses. In fact we have known it to stand well in houses where the frost has been scarcely kept out during very severe weather. The leaves are large, and from the edges of the deeply cut divisions hang numerous delicate white threads a foot or more in length. The foliage is of a

pleasing green which, contrasted with these filamentous appendages, render it distinct and very effective. It is also much appreciated for exhibition purposes.

Chamadorea cburnea.—A very beautiful species of rather recent introduction, coming from the New World. In a young state the leaves are deeply three-lobed at the apices, becoming

eventually pinnate and gracefully arched, of a vivid green colour, while the long slender petioles are white—a point which greatly enhances its beauty.

C. elegantissima.—This is an excellent as a table plant; the leaves are finely pinnate, well arched, and of a deep glaucous green colour. It enjoys and requires, like the last, a good stove



Fig. 37.—PTYCHOSPERMA BEKMANNI.

temperature and plenty of moisture; in fact the *Chamadoreas* will not flourish at all in a dry atmosphere.

Cocos Weddelliana.—This, without doubt, is the most elegant Palm ever introduced to our gardens from tropical South America. All the species of *Cocos* are more or less graceful, but this far surpasses the others. The stems are very slender in old as well as young plants, and covered with darkish fibre: the petioles are long and slender, beautiful arched with the

very numerous pinnae, narrow deep green above, white beneath. As a table plant the value of this plant cannot be over-estimated, while nothing can excel it for the embellishment of the stove and the arrangement of the exhibition table. The entire plant presents a gracefulness which should find its way into all collections of plants of any pretensions whatever.

Geonoma Carderii.—A very beautiful Columbian species of rather recent introduction. It is distinct and highly orna-

mental. To grow this species, as also all the *Geonomas*, many of which are very beautiful, a high temperature is essential and plenty of moisture. It is one of our best stove Palms. *G. gracilis* is especially well worth growing.

Latania aures.—In this we have a Palm quite distinct from the foregoing, and invaluable to render a collection varied, as it is one of the best of its series. The petioles are stout, nearly erect, yellow, supporting large palmate leaves, assuming large proportions as they increase in age. It is indigenous to the Mauritius, but rather limited in its distribution, and enjoys a stove heat, and is a superb species, deserving the attention of every cultivator of foliage plants.

Lividona australis.—This plant is more frequently known as *Corypha australis*, and is one of the most useful and ornamental of our cool-house Palms. It is a native of Australia, and will flourish well in the conservatory and ordinary greenhouse as well as the dwelling house; in fact it is of all the most valuable for the latter purpose.

Seaforthia elegans.—This is too well known to need much notice. We include it here because it is one of the most valuable for general purposes. Probably there is no other one Palm so much esteemed. Its gracefulness of contour and hardihood claim for it general esteem. It is indigenous to the most northern parts of Australia.

Verschaffeltia splendida.—We do not give the synonyms of this Palm, as they are numerous, and it is best known by the above name. There is no mistaking it, as it is so distinct in appearance. It has a slender stem, which is raised on a mass of large roots. The petioles are stout and clasping the stem, the whole being armed with reddish spines; the blade of the leaf is nearly as broad as long, cleft at the top, with several short divisions round the margins. It is invaluable for decorative purposes, having a majestic appearance. It is a native of the Seychelles, and probably will never be very plentiful, but it is extremely effective in whatever position it is found. It requires stove temperature, and is by no means difficult to grow.

Ptychosperma Seemanni.—This is a newer Palm than the preceding, and as may be seen by the illustration (fig. 27), for which we are indebted to Mr. B. S. Williams, it is very elegant and admirably adapted for table decoration, being moderately dwarf in habit, with graceful pinnate bright green leaves. It is a native of New Guinea, and consequently requires a stove temperature to obtain it in good condition. The stem is remarkably straight and strong, and on that account the inhabitants of native country employ it for making spears. This species is of quick growth and easily grown.—T.

IRISES.—No. 3.

XIPHION JUNCEUM, which is well represented in the annexed engraving, has been known much longer than either of the species that have been described, and yet, although by no means inferior in beauty, it still remains comparatively neglected. This is more to be regretted, because in the colour of its flowers it is very distinct from the majority of bulbous Irises, and it is certainly not inelegant in habit. The stem rises to a height of about 18 inches, and bears one or two flowers of a clear bright yellow colour, the standards being a few shades lighter than the falls. In size of flowers and habit this species approaches the English and Spanish Irises; indeed it has been confounded with *X. (Iris) lusitanicum*, which Mr. Baker considers as a variety of the old *Iris Xiphium* (*X. vulgare*), *X. junceum* being easily distinguished by its less robust growth and the absence of the violet tinge that is seen in the flowers of *X. lusitanicum*. The plant is distributed throughout the northern parts of Africa, principally in Morocco and Algiers, and in South Europe.

In Algeria *X. junceum* is known as Zetout, and the bulbs are eaten by the Arabs, who are said to be extremely partial to them as an article of diet. A writer in the *Cottage Gardener* about twenty years ago thus described the plant and the mode in which it was prepared as food. "The Zetout in general form resembles a wild Narcissus. The bulbous part, which is eaten, is about the size of a Filbert. It flowers in spring, and this stage of its growth indicates the most suitable time for pulling it up. The bulbs are divested of their skin and cooked (fried, probably) in butter or boiled in water. When properly cooked the bulbs are mashed up together like Potatoes, and it is said they are of an agreeable flavour. In Algeria the bulbs keep well enough in the ground during winter, and in certain places the wild boars burrow in the soil

for them. Hitherto the Zetout has been allowed to grow wild in Algeria, the Arabs being but little inclined for husbandry. It is probable, however, that were it introduced into France and properly grown, the bulbs would become larger without losing anything of their delicate flavour. We are informed that some of these bulbs have been sent to the Société d'Acclimatation in order to try if they will succeed in this



Fig. 28.—*Xiphion (Iris) junceum*.

climate. There can be little doubt of the result, and we may therefore soon have another addition to our list of vegetables." The writer's sanguine expectations do not appear, however, to have been realised, for no progress has been made in its cultivation as a vegetable, and except in a suitable climate where land is cheap and the plant would thrive naturally, any attempt to grow it for food would certainly not be remunera-

tive, as the produce is small. Still, if this beautiful Xiphion is scarcely worth growing in a dietetic point of view, it might be advantageously more generally cultivated in gardens with its numerous congeners. Like *X. reticulatum* and *X. Histrio* it should be planted in a warm border of light soil, in which position, especially in the south of England, it thrives very readily, and flowers during May and June.

There are several other species of Xiphion included in this section that are scarcely known in English gardens, and some that have not been yet introduced. They are all more or less attractive, and no doubt they will be some day included in our list of cultivated Irises. Of the former *X. filifolium* and *X. Kolpakowakiana* are examples; of the latter *X. tingitanum*, *X. diversifolium*, and *X. Fontanesii*. The English and Spanish Irises that remain to be described complete the section Euxiphion.—L. C.

THE FUTURE OF EPPING FOREST.

It was with great pleasure that I noticed the Editors had published Mr. William Paul's most instructive lecture on the above subject. I read it with great pleasure, and there are so many subscribers to the Journal who are identified with forestry, while thousands of your readers are interested in Epping Forest, that I am tempted to send you a few remarks upon the article in question.

There can, I think, be no question as to the ability with which the lecturer handled his subject; his remarks are lucid, and each paragraph contains some interesting fact. Perhaps the most valuable part of the essay is that which treats of the replanting of the Forest, and it is concerning this that I wish to offer a few remarks. I have only once had the pleasure of visiting the Forest, and that was under the guidance of Mr. George Paul, who kindly drove me to High Beach to see his nurseries. I must say the little I saw of the Forest charmed me, and I should much like to explore it more fully. The trees that I saw seemed to be stunted, and there was an immense mass of underwood, and a succession of what we call copses, which in the autumn present most glorious combinations of colours.

Mr. W. Paul gives us on page 96 a long list of trees which he recommends being planted. First, deciduous trees of three different characters; and secondly, evergreen trees; and lastly, flowering trees. In the class of evergreen trees he names a number of choice Conifers, Araucarias, Deodars, Cupressus Lawsoniana, and a variety of Cedars and Pines. Now these I do not think are admissible in a forest; they belong to a lawn or a park, but not to wild scenery. I was talking the other day with that great landscape gardener, the Hon. J. T. Boicaven, and he impressed upon me the importance of excluding all Conifers from the woods here. I suppose it may be said that those trees grow in woods in their native countries; no doubt they do, but they do not in England. I can well imagine, though, that there are glades near houses in the Forest where such trees would be in character; but to plant them in the woods or copses would be quite out of character. The list of deciduous trees is very large and well selected, and the evergreen trees are intended to carry the chain on through the winter. If anything like the plan advised is carried out, Epping Forest will be a glory and an honour to our grandchildren such as we now can but faintly picture.

Mr. Paul also would employ water as a beautiful adjunct to the sylvan scene, and no one recognises more fully than myself the great beauty of natural water; but when it is brought artificially, like that in Battersea Park, however beautiful it may appear, it is not strictly in consonance with wild scenery. But in Epping Forest there must be numerous streams which would offer marvellous opportunities for rockeries and small lakes. Mr. Paul also says a word in favour of wild animals which will rejoice the heart of all lovers of natural history, but I notice he says not a word of rabbits and hares. He knows too well, I suppose, the damage that the bunnies do to young Hollies and other trees, but at the same time nothing is more delightful when taking a walk in the evening through the woods than to see the rabbits steal one by one out of their holes and feed and frolic in open spaces.—WYLD SAVAGE.

HARRISON'S MUSK.—This will be a valuable acquisition to our stock of bedding plants. Notwithstanding the prevalence of rain and sunless weather of last year it was a mass of flower the whole season. Where a dwarf yellow-flowering plant is required I know of nothing to supersede it. I have proved it

to be quite hardy by leaving a long row of it out all last winter, and on examining the roots the other day I found them all fresh and beginning to grow. This is a great advantage where bedding-out is carried on to any extent.—J. DICKSON.

THE FROST OF DECEMBER, 1879, OVER THE BRITISH ISLES.

[Read at the Meteorological Society's Meeting on February 18th, by W. Marriott, F.M.S.]

EXCEPTIONALLY low temperatures were registered all over the British Isles from the 1st to the 7th of December. On the 1st the lowest temperature was -2° at Kelton, near Stamford (the figures following the—imply degrees below zero), and the next lowest was 5° at Trent College. The temperature continued low throughout the day, at several places not rising above the freezing point. On the 2nd the cold was more intense. In the counties of Leicester, Lincoln, and Nottingham the temperature fell below zero, the lowest being -45° at Coston, near Melton Mowbray. Temperatures between 0° and 10° were registered in the north and south of Scotland, and along the central part of the north of England to the midland and eastern counties; while over the whole of England, Scotland, and Ireland, with the exception of the seacoast stations, the temperature fell below 20° . On the 3rd the temperature was more evenly distributed and not quite so intense as on the previous day; however, in the North Riding of Yorkshire and the valley of the Tees readings at and below zero were registered, the lowest being -2° at Gainford. On the 4th intensely cold weather was experienced over the south of Scotland and the north of England. The lowest reading obtained was -23° at Blackadder in Berwickshire; -16° was also registered at Springwood Park, near Kelso; and readings of -5° were reported at Haddington, Melrose, and Corbridge-on-Tyne, and -4° at Alston. Temperatures below 10° were registered over the south and south-east of Scotland, and over the north of England as far as the valley of the Trent, and also in the eastern counties; while over almost the whole of England, Scotland, and Ireland the temperature fell below 20° . In some parts of the south of Scotland and the border counties the maximum temperature during the day did not rise to 20° . On the 5th the minimum temperature was not so low as on the previous day, there being a cloudy sky and a general fall of snow; in Ireland, however, this was the coldest day of the month. On the 6th the temperature fell considerably in Derbyshire, Nottinghamshire, and Yorkshire; readings of -5° being recorded at Trent, -10° at Buxton, and 0° at York and Stanley. At many places the maximum temperature during the day was much below the freezing point. On the 7th very low temperatures were registered over the whole of the north and east of England, the lowest reported was -10° at Kelton near Stamford. The temperature fell below zero in the counties of Essex, Leicester, Derby, Lincoln, Nottingham, and York, and also in the south of Scotland, while over almost the whole of the N.E. and central part of England as well as a portion of the S.E. district the temperature fell to 10° or below. Readings below 20° prevailed over nearly the whole of England and Scotland and the centre of Ireland. The maximum temperature during the day at a few places was extremely low, the thermometer at Appleby only recording 12.4° and that at York 18° . During the next few days a little warmer weather prevailed, but on the 11th the temperature fell below 20° over the central part of England, Scotland, and Ireland. Low temperatures were also experienced at most places on the 12th. Milder weather continued for the next few days, but on the 17th the temperature again fell below 20° over the whole of the south of England. Low temperatures also prevailed on the 18th, 21st, 23rd, 24th, and 26th, while the maximum temperatures at many places on the 21st and 26th did not reach 32° . At almost all the inland stations frost occurred on an average of about twenty-five days during the month, and temperatures below 20° were registered from eight to thirteen days at several places. The only station where frost was not felt was Scilly, the lowest temperature recorded there being 35° on the 2nd.

The only comparatively mild districts were the west and south of Ireland and the extreme south-west of England. Even the seaside health resorts, which are reputed for their mild climates, were not exempt from the cold, the temperature falling below the freezing point on eleven occasions at Ventnor, fifteen at Torquay, twenty at Sidmouth and Eastbourne, and twenty-four at Ramsgate and Worthing.

During the time of the cold weather the barometer was very high over these islands, and an anticyclone was formed over those districts where the lowest temperatures were recorded. That the cold was the result chiefly of radiation is shown by the great difference in temperature at the hill and valley stations. For instance, at Farley, 640 feet above sea level, 17.7° was registered on the 7th, while at Oakmoor, 300 feet lower in the Valley of the Churnet and less than a mile distant from Farley, the temperature fell to 1.1°.

The effect of the cold upon the health of the community was very great. In London the number of deaths referred to diseases of the respiratory organs increased to 799 in the week ending December 20th, and exceeded the week's average by 288. The public journals record the fact that several persons were frozen to death in various parts of the country. The frost also caused great injury to plants, shrubs, and birds.

IMANTOPHYLLUM MINIATUM.

THIS fine old inhabitant of our greenhouses deserves more attention than it receives generally, and should be grown more extensively by gardeners for decorative purposes. Perhaps no plant is better suited for the amateur, and none easier of cultivation. It is valuable for room or dinner-table decoration, and it has a very attractive appearance in the conservatory when the escapes of orange-coloured flowers rise above the foliage. When out of flower the dark green foliage is effective. Large specimens suitable for exhibition can be easily obtained, and it can be successfully cultivated in 5-inch pots for the purposes we have alluded to. The idea entertained by many that *Imantophyllum* will not bloom freely until the pots are full of roots is a great mistake.

Imantophyllum will bloom annually if repotted every year, but this is not essential. They are increased by means of suckers, which spring up freely from the base of the plant; these when large enough should be taken off and potted singly in small pots. It is not advisable to take them off too early, as they make greater progress when attached to the parent plant, and in many cases can be taken off with a few roots and placed in 5-inch pots. After one season's growth they are fine little plants for decoration. This plant grows vigorously in loam and sand, with a seventh of decomposed manure added, abundance of water being required at all seasons. When the pots are full of roots the plants are much assisted by the application of liquid manure. When rootless suckers are first taken off and placed in pots they should be placed in heat, and root-action will rapidly commence. Established plants enjoy a moderate warmth while growing, which should entirely depend upon the time they are wanted in bloom. With a number of plants, and judicious management in forcing them into flower, and assisting them to make an early growth, they can be had in bloom any time.—WM. BARDNEY.

PORTRAITS OF NEW AND NOTABLE PLANTS.

BROWNEA ARIZA. *Nat. ord., Leguminosae.*—"Brownea Ariza a tree about 40 feet high, is a native of New Grenada, having been discovered about the year 1842 by the late Theodor Hartweg in forests of the province of Bogota, at an elevation of 1400 feet above the sea, where it is called the Ariza by the inhabitants. It was not, however, introduced by that traveller into cultivation, though so stated by Paxton. The splendid specimen figured was flowered by the late deeply lamented Dr. Moore of Glasnevin, who was also the first to flower *B. grandiceps*. He received it from the continent (presumably from Mr. Linden) under the name of *B. princeps*; that it was then 14 feet high, and flowered profusely every year. In another letter of later date he says, 'Although the individual bunches of flowers are rather smaller than those of its rival *B. grandiceps*, their brilliant colour far surpasses it. The *Brownea Ariza* of Paxton's 'Flower Garden,' vol. ii., page 59 (1851-2), copied in Lemaire's 'Jardin Fleuriste,' t. 1942, is a totally different plant from this, and apparently *B. grandiceps*.'—(*Bot. Mag.*, t. 6469.)

GENTIANA KURROO. *Nat. ord., Gentianaceae.*—"A frequent inhabitant of the western temperate Himalaya, from Garwhal westward to Kashmir, at elevations of 5000 to 8000 feet, where it is one of the most ornamental of the herbaceous perennials from the delicacy of its azure blossoms sprinkled with pearly white, and the brilliant green of its foliage. It is a near ally of the British *G. Pneumonanthe*, but a far handsomer plant. According to Dr. Royle its native name in Garwhal is Kurroo,

and it is used as a medicine, no doubt from the bitter properties of the root."—(*Ibid.*, t. 6470.)

PACHYSTOMA THOMSONIANUM. *Nat. ord., Orchideae.*—"Its graceful form, and the purity and brilliancy of its white, and the vividness of its reds, render it one of the most beautiful Orchids of its type and habit, which remind one a good deal of some *Coelegynae*. It was sent from the west coast of tropical Africa (probably Old Calabar) by Mr. W. Kalbreyer, who desired that it should commemorate the services of the late G. Thomson, a well-known resident on that pestilent coast. It flowered at the Royal Exotic Nurseries in October, 1879."—(*Ibid.*, t. 6471.)

POLYGONUM AFFINE. *Nat. ord., Polygonaceae.*—"It abounds in the Himalayan valleys from Kumaon westward to Kashmir, growing at elevations of 9000 to 14,000 feet, but has not been found in Nepal, as often stated. In the Eastern Himalaya and in the Khasia Mountains it is replaced by *P. paleaceum*, Wall., a plant not recorded in Meissner's monograph of the genus in De Candolle's 'Prodromus,' and which is perhaps referable to *P. sphaerostachyum*. Another and a very beautiful ally of these is *P. vacciniifolium*, Wall., which is one of the most ornamental rock plants ever introduced into this country."—(*Ibid.*, t. 6472.)

NARCISSUS PALLIDULUS, N. GRAELLSII, AND N. RUPICOLA. *Nat. ord., Amaryllidaceae.*—"They are all natives of the mountains of Central Spain, at an elevation above sea-level of from 2000 to 4000 feet; and are all three figured in the 'Ramilletes de Plantas Espanolas' of Graells, published at Madrid in 1859. Mr. G. Maw has cultivated them successfully at Broseley, and distributed bulbs with his usual liberality. In their native mountains they flower in April; *Rupicola*, which ascends higher than the two others, reaching over into June."—(*Ibid.*, t. 6473.)

HEATING WITH SANITARY PIPES.—"T. R. J., *Sudbury Park*," gives an interesting account of his success. Having patented a heating apparatus for a church provisionally more than twenty years ago, and altered and improved it since, I can testify to the value of earthenware pipes, but should recommend persons never to use glazed pipes or socketed pipes. As I am making fresh improvements, and as my apparatus is now being used as the cheapest to put up, least unsightly, and easiest cleaned of any, I will explain it further in another issue.—C. P. P.

NOTES ON VILLA AND SUBURBAN GARDENING.

KITCHEN GARDEN.

Hotbeds for Vegetables.—Many proprietors of gardens, both large and small, from various causes find it advisable to sell their surplus vegetables, and probably a few hints upon what is profitable to cultivate may be acceptable. Those who have frames and fresh stable manure at hand may turn both to a profitable use, and those who have neither may with advantage purchase a few loads of the latter, as it will be found of service for forwarding vegetables and afterwards for manuring the garden. Previous to its being made into beds it should have been prepared as advised on page 148, and if any leaves have been collected they may be mixed with manure at the last turning. Frames and pits are valuable for forwarding vegetables, but very good crops if somewhat later may be had without the aid of glass. In either case the manure should be firmly made into beds not less than 8 feet in depth, but the breadth and width must be determined according to circumstances. If a pit or frame be not used boards may be placed on the bed to support the soil, and these may be either nailed together or be fixed in their places near the edge of the bed by long strong stakes, which can also be utilised for making a light framework across which mats or other protecting material can be placed.

Vegetables to be Grown.—Early Potatoes are always remunerative, as also are Carrots, and with either may be grown sufficient Radishes to nearly pay expenses. Cucumbers require more skilful treatment than the foregoing, but are sometimes paying crops. Rollison's Telegraph is most generally grown. Good varieties of early kidney Potatoes are Mons's Pride and Veitch's Improved Ashleaf, and Alpha and Porter's Excelsior are good round varieties; the latter is a very heavy cropper. The earliest Carrot is the French Horn, but the Early Scarlet Nantes and Carter's Improved Horn all grow to a better size and are really more profitable. Wood's Frame and the French Breakfast are good early Radishes either for growing in frames or the open ground.

A light and not too poor soil is suitable for any of the foregoing with the exception of Cucumbers, which will be more fully treated on in a future issue. Soil from old Cucumber and Vegetable Marrow beds, the siftings from the accumulated heaps of old potting soil, sweepings and other rubbish, if sandy so much the better—may be used in mixture, taking care to properly qualify heavy soil with the leaf soil and common sand, or the siftings of

the rubbish heap. A thin layer of decayed manure may with advantage be spread over the surface of the bed, and on this when all danger of overheating is past the soil, allowing a depth of about 9 inches for Potatoes and 6 inches for the Carrots. If the manure is at all dry when made into a bed well water it, as otherwise it will soon become too dry and be then useless. A trial stick should be inserted into the bed and constantly examined. When the heat has sufficiently declined to admit of the stick being comfortably held in the hand is the time to plant or sow.

Sow the Carrots in shallow drills about an inch in depth and 8 inches apart, and between these Radishes in drills of the same depth. The drills for the Potatoes may be about 15 inches apart, 5 inches in depth, the sets to be about 8 inches apart in the drills. These should have been previously sprouted, and only one strong central shoot retained, on kidneys especially, and when planted should be covered with soil by hand. The Radishes to be sown broadcast over the levelled surface and lightly raked in or covered with fine soil. They will be fit to pull before the space is wanted by either Carrots or Potatoes. Keep the frames closed till the Radish seed has germinated, after which ventilate on all favourable occasions, closing before the sun has lost its power. Cover both these and the beds outside with protecting material at night, and the beds should be covered with fish nets, or the Radish seed will be taken by the birds. Failing these nets the seed should be damped, dusted with red lead, and dried previously to sowing. Straw, fern, or litter neatly packed round the beds will help to keep in much heat. Turf pits and rough deep wooden frames are good heat-economisers, and are afterwards useful for other purposes.

Sow seeds of Cucumbers and Melons singly in 4-inch pots or thinly in 6-inch pots. Employ rather light but not too poor soil, and plunge the pots in gentle bottom heat.

GREENHOUSES.

Large-flowering Pelargoniums.—These are seldom well grown by amateurs, because they are so often crowded in among ordinary greenhouse plants. They must have room, or they soon become spindly and infested with green fly. They frequently also receive too much water during the winter months, which encourages growth at an unseasonable time. If placed on a shelf near the glass in a cool house and watered carefully they become sturdy. Where the young growth has become spindly pinch the whole of it back to within two joints of its base, as, however long the shoots have become, they will break freely and strongly. When they are commencing to grow afresh give them a small shift, using well-drained pots, and potting firmly; the soil if possible to consist of three parts fibrous loam to one part of leaf soil or decayed manure well broke up or sifted, with a good addition of road grit in preference to sand. Shelves being unavailable elevate them on inverted pots to give them all the light and air possible. Thin out the growths if at all crowded, as a few strong shoots give a more lasting display and bloom of a better quality than do a number of weak shoots.

Musk.—Harrison's large variety is fast superseding the common Musk, and rightly so seeing how showy and sweet it is, combining as it does the Mimulus with the common Musk. No small collection of greenhouse plants is complete without it; it should be divided and repotted every season at the present time. Every little growth or sucker will make a stocky plant if pinched back a few times; but the simplest plan is to place a few suckers into 5 or 6-inch pots, and to pinch back the shoots till the pots are covered. Any common soil is suitable provided the pots are well drained. Surplus plants should be planted in the flower garden.

Mignonette.—A few seeds sown now will give a very acceptable supply of bloom much earlier than that sown in the open. Employ either 5 or 6-inch pots, and soil consisting of three parts of fibrous loam to one of well-decayed manure with a good addition of mortar rubbish, which should be made very firm previous to sowing. Mignonette having very close and fine roots. Sow thinly, pressing the seeds into the soil; cover lightly, water with a rose pot, keep the pots near the glass, and thin out the plants when large enough.

WORK FOR THE WEEK.

KITCHEN GARDEN.

THE continued wet weather has retarded many operations which under favourable conditions would have been well advanced, thus greatly increasing the work at this season. It is useless to prepare ground for seed-sowing while it is wet, as much harm is always done under such circumstances. The postponement of sowing for a few days or weeks at this early season is of far less consequence than would be the case later in the season, when the ground though wet will be warm. Lose no opportunity, however, of preparing ground for the seeds of root crops. The object in most places is to obtain a supply of new Potatoes from the open ground as early as possible, therefore a breadth of early varieties should be planted when the soil is suitable. A south border or a sheltered situation should be chosen, and a single row planted at the base of a south wall will be ten days earlier than any other. Veitch's Ashleaf and Myatt's Prolific are suitable varieties. In

gardens situated in damp situations early planting is not advisable, as the Potatoes are more liable to suffer from frost; hence all preliminary preparations should be made, but planting of the early varieties should be deferred until early in next month, following with the other varieties about the third week in that month. Kitchen gardens are not generally available for late crops of Potatoes on account of insufficient space, and the ground is usually too rich for the production of satisfactory crops. All early varieties should be sprouted before planting so as to secure regularity of growth, planting whole sets about 1 foot apart and 4 inches deep in rows 2 feet asunder; but as the crop is not always off in time for winter vegetables we have the rows 8 feet asunder, between which are planted when ready the earliest winter and spring Brassicas. All Potato sets should be spread out singly in a place where frost is excluded, and from being cool and moist the tubers will keep firm. Where it is intended to make fresh plantations of Asparagus the ground should be prepared by deep trenching and applying manure, but planting should not be done until the plants have commenced growing. Asparagus beds may, if the weather is suitable, be lightly forked over, and the alleys prepared for Cauliflower plants. These plants though fairly hardy from the freedom of giving air, are as yet small and should not be planted out for another fortnight.

Forcing Department.—If there are no permanent beds of Asparagus available for forcing, another lot of roots must be started in a frame or pit over fermenting materials in order to maintain the supply. Another batch of roots of Seakale and Rhubarb along with Chicory must also be introduced to the Mushroom house, or they may be covered with pots and fermenting materials outside. To ensure a late supply of Seakale in good condition inverted pots should be placed over the crowns and covered with long litter. The ventilation of frames containing Potatoes must be attended to whenever the weather is favourable, and if water be necessary supply it in the early part of the day without wetting the foliage. Celery seed for the principal crop should now be sown, placing the pans in gentle heat and near the glass until after the seeds have germinated, when the pans may be removed to a house or pit from which frost is excluded. Sow Dwarf Kidney Beans at intervals in proportion to the demand. Supply those in bearing with liquid manure, and keep the pods closely picked as they become fit for use.

FRUIT HOUSES.

Orchard House.—The trees should now be closely examined for insects. The brown or Peach aphid attaches itself to the young wood, and thrives amongst the swelling buds and expanding flowers. Tobacco water applied with a brush or repeated fumigation will destroy these pests. Thin-out the shoots where they are too crowded, and any strong shoots not having fruit buds may be cut back or removed. Plum trees from stopping in summer become overcrowded with spurs and should be judiciously thinned. Similar remarks apply to Pears. See that there is no deficiency of water at the roots of the trees. The ventilators should be closed every night according to the state of the weather, which must also regulate the time of admitting air in the morning, yet air must be admitted to some extent before the sun has advanced the temperature considerably. It will be advisable to keep the house cool so as to retard the flowering as much as possible, but after the blossoms are well advanced an increased temperature is needed to ensure their proper maturation. Maintain a night temperature of 40° to 45° and 50° by day, above which ventilate freely. In a cold house after the trees are in blossom early closing should be practised. In cold unless weather whilst the trees are in bloom the ventilators must be kept closed by day as well as night, but no opportunity of admitting air should be lost when the external air is favourable. Impregnation of the blossoms must also be attended to in the early part of the day when the pollen is ripe.

Cherry House.—Grubs will soon be troublesome. One kind will be found rolled up in the leaves, and is easily destroyed by gently squeezing or unfolding the leaves; but the other will be found enclosed in a case attached to the under side of the leaves, and unless destroyed it gives them the appearance of being scalded. It also perforates and destroys the fruit. The only means of destruction is to look over the trees carefully and kill the pest. Ventilation must have unremitting attention, opening the house at 50°, above which a free circulation of air should pass through the house, regulating the supply according to existing circumstances, employing artificial heat as required to prevent the temperature falling below 50° in the daytime, and to maintain it at 40° by night. Fertilising the blossoms must be attended to as they become mature. Aphides must be promptly destroyed.

Peaches and Nectarines.—In the earliest house the fruit will soon have completed the first swelling, and will enter upon the stoning process. If the thinning of the fruit has been carefully attended to there will be little more than the quantity left that the trees are to bring to maturity, which should be one to every square foot of trellis covered by the trees, and for Nectarines the fruit should have about the same space. If there is more fruit than specified above remove the smallest, so as to leave only the requisite number, or not more than sufficient to allow for casualties. There is no danger of the fruit dropping during stoning, provided the wood

was thoroughly ripened last season and the trees are not unnecessarily taxed by too many fruit. During the stoning process the temperature should be kept as equable as possible, as a sudden check by draughts of cold air in the daytime and too high a temperature in the night may prove disastrous, and certainly is not good for the foliage and fruit. The night temperature may range from 60° to 65°, but 5° less will be safer in severe weather, and in the daytime 70° to 75° with sun heat and about 65° by artificial means when the atmosphere outside is cold and the sky overcast. See that the growing shoots are secured to the trellis as they advance, keeping those retained to attract the sap past the fruit stopped at the second or third joint. Red spider must be kept under by syringing with water of the temperature of the house, and if thrips or brown aphids appear fumigate carefully when the foliage is quite dry. In the next succession house attend to the disbudding of the shoots, and have all the leading shoots tied down, taking care not to overcrowd them. Thin the fruit by degrees, removing those on the under side of the trellis or otherwise badly placed, but leave those that are well exposed to light and air until they indicate by free swelling the necessity of further reduction, then removing the smallest. Syringe the trees early during fine days, and ventilate freely in favourable weather. The temperature may now range from 55° to 60° at night and 60° to 65° by day, ventilating at the latter temperature, and closing the house when the heat is decreasing, allowing an advance of 5° to 10° from sun heat. The trees in the house started last month will be in flower, and must have a night temperature of 50° to 55°; and 55° by day with a little ventilation, as a close atmosphere is fatal to a good set. Ventilate freely above 55°, and allow an advance to 65° with sun heat. Fertilise the blossoms in the early part of fine days. In the latest heated house the blossoms are well advanced; therefore ventilate freely above 50°, and employ artificial heat to prevent the temperature falling below 40° at night. Keep unheated houses as cool as possible, and when the blossoms are advanced ventilate freely during fine weather, closing the house with sun heat at 65°. Be careful that none of the inside borders become dry, supplying liquid manure to weakly trees. If there is a great show of bloom on the late trees or others draw the hand down the shoots at the under side or back of the trellis, so as to reduce the blossoms on that side.

FLOWER GARDEN.

Bedding Plants.—Propagation must be started, if not already done, in earnest. Cuttings of *Ageratum*, *Petunias*, *Verbenas*, and *Tropeolums* now inserted will make by planting time finer plants than those struck in autumn. *Pelargoniums* from store boxes, pans, or pots, should be potted off, and cuttings should be inserted of any varieties that require to be increased. Some of the old varieties, such as *Vesuvius*, *Waltham Seedling*, *Lord Palmerston*, *Master Christine*, *Madame Vaucher*, *May Queen*, *Flower of Spring*, *Lady Plymouth*, *Mangles' Variegated*, and *Crystal Palace Gem* are still unsurpassed for beds. *Coleuses* and *Iresines* in a moist heat of 60° to 65° will soon yield plenty of cuttings. *Alternantheras* should have a moist heat of 70° to 75°, and as soon as cuttings are available they may be inserted in hotbeds formed of leaves and litter. Subtropical plants still in the seed pans should be pricked or potted off as soon as they are large enough, returning them to a warm house. Seeds of *Amaranthus*, *Chilian Beet*, *Perilla*, and *Variegated Maize* may now be sown. *Dracenas*, *Phoriums*, *Ficus*, *Cannas*, *Caladium esculentum*, *Palms*, *Yuccas*, *Agaves*, and *Musas* wintered in cool quarters should be encouraged with an increase of heat and moisture, and if necessary be top-dressed or repotted. Seeds of *Ten-week Stocks*, *Asters*, *Dwarf Scabious*, *Phlox Drummondii*, and other half-hardy annuals may be sown in gentle heat, keeping the pots near the glass. *Lobelia* seed should also be sown without further delay, so as to secure strong plants by bedding time. *Verbenas* are not to be depended on for forming beds of separate colours, but they form very effective mixed beds, as do *Petunias*, the seeds of which should be sown now in gentle heat. *Salvia patens* is unsurpassed in its colour—blue; seed should be sown at once. *Delphiniums*, *Pyrethrums*, *Indian and Chinese Pinks*, sown and forwarded in heat, will flower the first season and be useful for cutting. A first sowing of hardy annuals may be made in warm soils and situations, selecting the hardest kinds, deferring the general sowing until the early part of next month. *Mignonne*, *Sweet Peas*, *Sweet Sultans*, and *Centaurea Cyanus*, being desirable as cut flowers, should be extensively grown. *Plant Gladioli*, also *Liliums*; *Hollyhocks* plant where they are to flower, mulching around each with short litter. Pot off cuttings of *Dahlias* as soon as rooted, and insert more cuttings if required. The old roots may be divided, leaving a bud to each, potted singly, and placed in gentle heat until started, after which remove them to cooler quarters, where they will grow slowly till planting time.

TRADE CATALOGUES RECEIVED.

Thomas S. Ware, Hale Farm Nursery, Tottenham.—*Catalogue of Bulbs and Hardy Perennials*.

Barr & Sugden, 12 and 13, King Street, Covent Garden.—*Catalogue of Flower and Vegetable Seeds*.

Robert Parker, Tooting, Surrey.—*Catalogue of Alpine and Herbaceous Plants*.

A. E. Syers, Bowdon, Cheshire.—*List of Fumigators, Frames, and Garden Requisites*.

TO CORRESPONDENTS.

UNHEALTHY ORCHID FLOWERS (G. W.).—From the appearance of the flowers we imagine that the plant must be in an unhealthy state, either through defective root-action or through being grown in a house where the temperature is not sufficiently high. The injury is not due to insects.

VIOLET ARGENTIFLORA (George Lee, Clevedon).—The flowers sent are extremely pretty, the petals being bluish faintly suffused with violet, imparting to them a silvery appearance, which contrasts well with the deep violet spurs. The leaves exactly resemble those of the common hedge Violet. The flowers are deliciously fragrant.

SOWING ANNUALS (D. T. E.).—You may sow such as *Nemophilas*, *Clarkias*, and all the popular hardy annuals at once, and in all probability the flowers will be finer and the plants more vigorous than if you defer the sowing of the seed until April, provided you can prevent the plants being injured by slugs.

PRUNING ORANGE TREE (C. J. B.).—You may shorten the growths of the tree to any extent you desire, and there is no better time for doing it than the present, or just as fresh growth is commencing. We presume the tree is planted out; if so, judicious root-pruning may be necessary in the autumn to check excessive luxuriance, or the branches will soon be as tall and strong as they are now.

STATICES (H. S. G.).—Many of the names you have received are incorrectly spelled; 3 should be *Besseriana*; 6, *eximia*; 7, *Smithii*; 8, *serotina*; 10, *echinus*; and 11, *Gmelini*. 1, 2, 5, and 9 are correct, but 4 we cannot recognise. All succeed in a greenhouse temperature with similar treatment to hard-wooded plants. The soil should consist of peat, sand, and loam, the latter in small proportions. The pots must be well drained, and water should be very carefully supplied.

MAKING ASPARAGUS BEDS (A Reader).—If the soil is deep, light, and well drained, and the rainfall of the district is not excessive, the beds are as well, if not better, on the level than raised considerably above the surface. The finest Asparagus is usually cut from plants grown 18 inches asunder in rows 3 feet apart on level ground, or rather in shallow trenches. You cannot do better than grow the variety that is ordinarily cultivated. The size of the heads depends on high culture more than on growing any particular variety.

EDGING PLANTS FOR MIXED FLOWER BEDS (K. T.).—No one can answer your question without having fuller particulars of what you require. Do you wish the six plants to each form a continuous line, or do you wish to plant them to form a mixed edging? Do you desire them to be hardy plants? At what period of the year do you desire them to bloom—spring or summer, or both? Correspondents cannot state their wants too explicitly for ensuring replies that will be useful to them.

SEEDLING POLYANTHUSES (E. T. H.).—Plants raised from seed sown last April and May ought, if they have been well cultivated, to flower this spring. Whether your plants will flower or not depends entirely on their size and condition. The same remarks apply to the young plants of *Alyssum saxatile* compactum. No one can determine whether the plants will flower this spring or not without seeing them. Ask a competent gardener in your district to inspect them, and follow his advice relative to planting them in the beds.

PRUNING ROSES (B. B.).—It is of little use, we fear, shortening the green wood above the parts that are "turning black," as this discoloration is almost sure evidence that the wood is there killed by the frost. It is not at all unusual for the young wood to be green and sound while the older and harder wood below is injured or destroyed. In the case of standards you can only prune as you propose and await the results of spring; but in pruning dwarfs we should prune below the blackened wood, and induce fresh growth from near the ground.

GROWING FOLIAGE PLANTS IN GREENHOUSE (E. B. B.).—The temperature of the house will not be sufficient for many of the more handsome fine-foliated plants, but you may grow such as *Begonias* of the *Rex* type, *Palms*, green *Dracenas*, and *Ferns* successfully. Lists of suitable species of varieties with modes of culture will be found in our "Greenhouse Manual," which can be had from the publisher in return for ten penny postage stamps. You may also grow such variegated plants as *Burys latifolia variegata*, *Aspidistra lurida variegata*, *Phorium tenax variegatum*, *Coprosma Baneriana variegata*, *Tradescantia zebrina*, and some others, particulars of which will be found in the Manual referred to.

CATLEYA UNHEALTHY (J. B.).—Remove it from the large pot and place it in one as small as possible without crushing or injuring the roots of the plant. Fill the pot three-parts full of crocks and employ a compost of fibrous peat, sphagnum, and lumps of charcoal for placing round the roots. The plant must be firmly fixed in position with the aid of sticks or wire, and must have a moist shaded position in the house. You had better pot the *Liliums* in turfy peat and loam, the bulbs to be embedded in sand and covered about 2 inches deep. The pots should be buried in damp ashes in a frame until the plants commence growing. They can then be either planted out or be flowered in pots.

ASPHALT WALKS (T. C. K.).—You say "asphalt is too dear," and yet you ask for a mode of "mixing tar, ashes, and lime together" so as to form a smooth firm surface. By the term asphalt we presume you mean cement paths. For mixing the lime and ashes proceed as follows:—Take two parts of very dry lime rubbish and one part coal ashes, also very dry, and both sifted fine. In a dry place on a dry day mix them, and leave a hole in the middle of the heap, as bricklayers do when making mortar. Into this pour boiling hot coal tar; mix, and when as stiff as mortar put it down 3 inches thick to form the walk. The ground should be dry and beaten smooth. Sprinkle over it coarse sand; when cold pass a light roller over it, and in a few days the walk will be solid and waterproof.

TALL DRAWING-ROOM PLANTS FROM SEED (Somerset).—Plants to be raised from seed now and grown to a height of 4 to 5 feet by August are not numerous. You will probably be successful with *Amaranthus tricolor*, *giganteus*, *Zea curagua*, *Solanum laciniatum*, and *Eucalyptus globulus*. To these you may add *Aralia papyrifera* and *Aralia spinosa* as useful for this time and next year also; *Humea elegans* for next year, and if you raise some *Cordylus indivisa* from seed now they would be useful next year for the

bottom of your stand, and in due course take rank with the tall plants. *Andromeda formosa* will answer admirably for the centre of your peat bed, and you could have no better evergreen shrub for the second circle than *Kalmia latifolia*.

HARDY FERNS FOR EXHIBITION (E. S. W.).—For this purpose the plants must be free growers which attain to a good size, and the specimens constituting a group should be as dissimilar in appearance as possible. You may select six plants from the following twelve, that if well grown will be worthy of being staged at any show:—*Isoetes Flix-mas* Barnes, *L. F.-m. cristata*, *L. F.-m. grandiceps*, *Adiantum Flix-femina* Ellworthill, *A. F.-f. Victoria*, *A. F.-f. Craigii*, *A. F.-f. plumosum*, *Osmunda regalis*, *O. regalis cristata*, *Onoclea sensibilis*, *Scolopendrium vulgare crispum*, and *Polystichum angulare cristatum*. A house suitable for growing hardy Ferns would not at all times be suitable for Orchids, as the former require much more air than is often good for the latter. The following terrestrial Orchids might, however, be grown:—*Cypripedium acaule*, *C. spectabile*, *Disa grandiflora*, *Orchis foliosa*, and *O. maculata superba*, all of which are very beautiful and require a cool temperature.

HEATING GREENHOUSE (J. C. S.).—The sketch is so imperfect that we can scarcely understand it. As the path is raised, cannot you take a 3-inch pipe from the top of the boiler quite round the house and connect it with the outlet pipe at the bottom of the boiler? That simple plan would answer admirably provided you can place the return pipe across the doorway without inconvenience. If you cannot do this we should take a 3-inch pipe as far as the doorway with the return immediately below it back to the boiler. For making provision for heating the pit you will need proper bends with outlet pipes from them at the south-west corner of the house. If you send a clear plan with accurate measurements to those from whom you obtain the apparatus the right connections will be sent. You did not state the height of the house, but we think the oblique arrangement of the pipes would not be satisfactory. All the boilers you name are good.

EXTIRPATING WIREWORMS (A. de S.).—As you have applied salt, soot, quicklime, and gaslime, and have also trenched the ground without effect, we can only suggest burning of the top spit of the soil; you would then effect a radical cure and greatly increase the fertility of the soil. This, however, is a plan that for various reasons you may be unable to carry out, and then the only course we can recommend you to adopt is to entrap the grubs. Baits may be formed with Carrots and Potatoes, which must be examined frequently; but better traps even than these are freshly cut turves buried an inch or two deep in the soil. We have seen hundreds of wireworms caught in such turves, and by close attention have known a piece of ground much infested almost or entirely cleared of the pest. Perhaps you have not employed gaslime and salt in sufficient quantities. If they are dug in now at the rate of ten bushels each per acre they will do something towards banishing the grubs.

ROSES ON THEIR OWN ROOTS (Rosarians).—Nearly all Roses succeed well when struck from cuttings, but they do not produce fine blooms so soon as if worked on already well-rooted stocks. For garden decoration and for affording a supply of flowers for various decorative purposes Roses on their own roots are very suitable. If you purchase the plants you will only receive those varieties that succeed well as struck from cuttings; if you raise your own you cannot do better than insert cuttings of all the varieties to which you allude, and you will then ascertain which of them thrive best in the soil of your garden. Cuttings strike readily during the summer and early autumn, but not in the spring months. We are unable to give the "list" you ask for, as you do not state the number of varieties you require. Roses budded low on the Manetti or seedling Briar and planted so that the union of the bud with the stock is placed 3 or 4 inches below the surface, nearly always emit roots from above the union, and really become "Roses on their own roots," and are thus with the requisite mulching ensured from destruction by severe weather equally with plants that are struck from cuttings; for if killed down to the mulching or "snow line" they will be sound below, and if cut down will push strongly and soon form flowering plants.

TEA ROSES IN POTS (Bury).—Had you stated the size of the pots in which the Roses arrived from the nursery and the length of the growths of the plants we could more easily have answered your inquiry. Tea Roses, as usually supplied by nurseries for flowering in pots, have well-matured growths ranging from 3 to 6 feet long in the autumn, these growths being trained round sticks inserted in the pots. In this condition the plants need scarcely any pruning, but only the unripe tips of the shoots are removed. The bent growths produce flowers at almost every bud along the entire length, and growths issuing from near the base of the stems form flowering shoots for another year. By no other mode can so many blooms be had from plants in pots. To insure sturdy growth the plants must have a very tight position, have plenty of air, little artificial heat, and be kept scrupulously free from insects. It is not at all certain that the plants required re-potting immediately you received them. It is a very common but in many instances a very erroneous practice to repot plants immediately they arrive from a nursery.

STOPPING SWEET PEAS (Idem).—During a summer like the last it might have been advisable to have pinched off the tops when the plants were in a young state, but in ordinary seasons the practice is not necessary. You can only determine the point by the condition of the plants and the nature of the soil and season; but we should not stop them until they were a foot in height and very luxuriant.

RIPPINGILL'S PROPAGATING FRAME (S. B.).—This frame when rightly placed and properly managed answers its purpose well. The excessive moisture of which you complain may be prevented either by elevating the light at the back about a quarter of an inch less or more, and allowing it to remain so night and day, or by placing less water in the evaporating tray so as to let it get dry occasionally. Drip may also be in a great measure prevented by covering the glass at night with a mat or sheet of some kind so as to prevent the cold of the surrounding air condensing the moisture inside the frame and causing the water to trickle down the glass. The fact that the front of the frame is dry while the back is dripping wet proves conclusively that the steam has risen to the back and condensed there, because it could not escape with sufficient freedom. We suspect that the ventilation of which you speak has only been provided in the daytime, the frame having been entirely closed during the night. Your complaint that *Azalea* cuttings did not strike in ten days is not a just one, for they usually require more than twice that time to emit roots under the most favourable circumstances. That you have succeeded in striking the cuttings at all at this season of the year, also *Gardenias*, is creditable to you as an amateur, and is testimony of

the efficacy of the frame. As to the cuttings damping after they are rooted, that is only what you can expect if young greenhouse plants are kept in a close moist stove temperature. Immediately cuttings are rooted they require more air and light, with less moisture and a lower temperature than that of a propagating frame. Unless you have a house with a genial temperature of about 68° as a minimum to which you can transfer the rooted cuttings you had better not commence propagating so early, as you will inevitably fall in your object if the rooted plants you name—*Azalea*, *Lobelia*, &c., are left in the close heated frame, or if they are removed from it at once to the dry atmosphere of a cold greenhouse. The coco-nut fibre refuse is suitable for plunging the pots in. The frame is not glazed too closely for the majority of propagators; and as to the slope being insufficient, we have struck thousands of cuttings in cases having no slope at all, and hundreds of thousands will be struck similarly during the present month.

NAMES OF PLANTS (G. W. B.).—We do not undertake to name *Camellia*, for nearly all those in cultivation are garden varieties, not species, and so one can name the flowers without comparing them with others in a large collection, as so many of the varieties so closely resemble each other. The flower sent may possibly be a pale and imperfect form of *Camellia* *Lavina* Maggi. (A Reader).—The Orchid is *Zygopetalum maxillare*; the *Azalea*, *A. verticillata*. (A. B.).—1 resembles an *Asystasia*, but the flowers were all withered; 2, unrecognisable; 3, apparently the leaves of a *Calanthe*. (A Young Subscriber).—We do not undertake to name plants without flowers, but No. 2 is *Begonia argyrostigma*; 3 is perhaps a species of *Tasmania*; 4 resembles a *Swainsonia*; 5, *Tradescantia zebrina*. The *Salicicella* was all withered for identification. The *Lapageria* may be treated as you propose if taken up carefully and shaded after planting.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

STEAM CULTURE.

(Continued from page 167.)

IN further consideration of this subject we think the questions to be asked before commencing either system of steam culture are somewhat as follows:—To what extent can the number of horses be diminished on the farm? How far is the occupation suited as regards depth and nature of the soil? and are coals and water easily obtainable or not? Good roads and large square fields should also be taken into consideration, for in case the railway station is far distant or the water supply is scanty, and there is no chance of storing the surplus rainfall in convenient places in ponds or tanks, there must be more expense in working, and at certain times considerable difficulty in using the larger double engine direct system. It is now possible in many parts of the country to hire steam ploughing tackle on the direct and double engine system, and if we could always be served at the time required, and the prices charged were moderate, there would be an end of the matter; nor do we think the day is very far distant when we may almost be able to have steam ploughing or cultivating done for hire with as little difficulty as the threshing by steam is now obtainable. The prices usually charged by steam ploughing companies, and by some enterprising firms in certain districts, vary for ploughing, according to depth, from 14s. to 18s., and sometimes more, per acre; for cultivating once 10s., twice about 15s.; and harrowing once 8s., and twice 5s., the farmer finding horses for carting water and coals. We think it hardly possible to draw a fair comparison or to go into figures as to the cost relatively of steam and horse power. It will be found the operation thoroughly completed by steam is an entirely different one, and the land is left in a state which will far more readily produce tilth than after a similar piece of work is done, or attempted to be done, by the means of horses.

Some years ago, when the cost of manual and horse labour were both much less than now, it was estimated by various practical men that the cost of culture by steam power was about three-fourths that of horse power. At the same time it is more efficient, and we think the home farmer will not err much by putting the cost at present at nearly one-half upon all land that is particularly suited for steam cultivation. Still upon the other hand, when we speak of very strong land or light land—such as we find where downs have been broken up on the chalk hills, and some other light forest lands that have been brought into cultivation—the results are slightly different. We think it a question for serious consideration whether a pair of heavy active horses drawing a double furrow plough is not as cheap a motive power under the circumstances as has yet been obtainable by the employment of steam.

We will now quote a statement made by a large farmer on the chalk hills, who cultivates over a thousand acres:—"Before I purchased steam tackle I was not master of my work with less than thirty-two cart horses. I believe I am now in a better position as regards efficiency with a pair of Fowler's engines with direct tackle and twenty horses, besides being occasionally able to assist a neighbour. In order to profitably use steam I had to obtain consent to grub out several acres of hedgerows and small pieces of woodland, which otherwise would have prevented my working economically, and I had to have extra ponds made, for I am nearly always dependent upon surface water, and without ponds the water would have had to be carried a distance of between two and three miles. The coals required for the working of two engines, if the Hucknell coal is obtainable, should not take but little if any more than a ton per day for both engines. The items of grubbing and pond-making are of course, and should be considered in my case as, part of the first cost; but I feel certain that my investment was a sound one, and that I am working my farm now more cheaply than before. The number of horses mentioned is the minimum that I consider and find necessary, and I do not think any other set of tackle would more completely answer my purpose. The implements I use are the plough, cultivator, harrow, and presser. I much prefer ploughing or digging in the autumn, and cultivating or harrowing in the spring and summer. I find if the land is clean after being ploughed in the autumn the steam harrow leaves a perfect seed bed for spring corn, and it is only necessary to give one tire with the cultivator and your land is ready for the drill for either mangold, Swedes, or turnips. It is certainly very instructive and interesting to observe with what ease, compared with horse labour, the steam engine harrows down the fallows; the drill follows, and the seed is sown. I would here observe that I have found in practice it is best to be careful and see that the land is not left too loose and hollow, for there is a certain amount of consolidation of the soil required by every crop, and in this respect the horses must do what the steam tackle does not do, according to the varying circumstances connected with the condition of each particular field." Now this statement, as derived from an eminently practical agriculturist, is worthy of all attention by the home farmer, for whether the home farm be large or small there is much to be learnt from such lucid remarks concerning the use and application of steam power in the culture of arable land.

We must now refer to the question of how far the home farmer having the opportunity to hire steam power will be justified under ordinary circumstances in doing so. Let us take the case of a home farm consisting of 100 acres of pasture and park lands and 100 acres of arable land of mixed soils, such as part heavy loam, part sandy, and the remainder gravelly soil, irregularly mixed, as we often find them, and quite unable to be tilled separately. Such mixed soils are about the most difficult to keep clean and free from couch grass of any we have ever had in hand. Now, the power for working this by horses, and generally considered sufficient, would be four stout active cart horses and two strong useful odd horses. The park and pasture lands will, of course, require horse labour at certain times of the year, such as carting manure and compost in the autumn and winter, rolling, &c., in the spring, cutting, bedding, and carting the hay. This work, together with the work required upon the arable land at the different periods, together with work at the homestead, will constantly employ, even with judicious management, the whole of the horse power above named. Indeed, we have rarely seen it done, and even when it has been done the work would have been much more effective if it had been assisted by occasional hired steam power; we therefore now wish to state our opinion as to the manner and extent of supplementing the horse power of the farm. We would take care that all foul land intended for roots in the spring should be steam-cultivated and cleaned in the autumn, and immediately after harvest, or even during harvest if the necessary manual labour can be obtained. After the seed time for wheat has passed, this land, together with that which may be found clean, should be all deeply fallow-ploughed to remain during the winter, so that the land may only require scarifying and working to receive the seed in the spring either of Lent corn, potatoes, mangolds, or other sorts. A portion found clean in the autumn will have been seeded to green crops, such as rye, trifolium, vetches, &c.; such land will come in for roots at one ploughing. Now, we have often heard the home farmer say, Why should we hire steam when the horse power will do the work in the spring if the weather should prove favourable? Now, we venture to assert, from our experience and observation for a long series of years, that trusting to spring tillage is the most fallacious idea, and is at the bottom of all the difficulties which occur to the farmer in the cultivation of arable land. We will even suppose that the cleaning of certain foul pieces of land is deferred until the spring, and the weather should prove favourable, is it not the fact the time that would be spent in spring culture is required to seed the land in due season with the various crops? We therefore give it as our opinion that no money can be better spent than by hiring steam power to insure a due season for all work.

(To be continued.)

WORK ON THE HOME FARM.

Horse Labour.—The horses are now fully employed in spring tillage. This will of course vary somewhat upon different soils, for the driest land will always come in season for receiving the seed the earliest. It is at this time of the year when the odd horse of the farm will be considered of as much importance as any horse employed, and there always should be one or more of these according to the size of the occupation. We have found good strong mules answer well for doing the odd work of the farm; at any rate, we hold it to be bad policy that the teams or pairs of farm horses should be broken or separated. It often happens that much work is neglected, particularly that which contributes to the decency and appearance as well as the profitable work of the farm, rather than break the pairs of horses in work. The odd horse will now be employed in carting couch off the land under tillage, carting hay and roots to ewes and lambs, carting straw and roots to the fattening cattle in the boxes or stalls or store stock in the yards, and various jobs necessary to keep up a cleanly and decent appearance of the homestead.

Hand Labour.—This will now on the first appearance of the land being white and dry, be required in draining, should any require to be done, which will now be easily seen by the wet spots exhibiting a dark colour, which will enable the home farmer the more easily to set out the work, after digging a few holes to ascertain the depth at which the water prevails in the subsoil. The yard or cattle man will now find that his store pigs will do best upon carrots and cracked peas or beans. This food will always keep them in a healthy growing state at as little cost as any mode of feeding we know of. We have sometimes known pigs when first weaned fed upon mangold and cracked peas; but we have also known serious losses occur from giving mangolds to young pigs under six months old, for they will often pine away and die off gradually. When, however, examined after death the lungs are found to be destroyed and of a black colour, very like what is seen in post-mortem examination in cases of typhoid fever. Horse feeding and stable management is at all times an important matter for the consideration of the home farmer. We never think of driving more than two horses to a plough even in winter time in fallow ploughing, although the land may be hilly and a heavy mixed soil. It is necessary, however, to have horses not less than 16½ hands high and stout in proportion, with also great activity; and in order that they may be equal to the work it is essential that they should be well fed. Our allowance of corn, &c., at this period is 80 lbs. of good white oats or drege with 2 cwt. of good clover hay per horse per week, with a few cracked beans on the occasion of extra hours in work. In the winter months, from the termination of wheat-sowing to the commencement of spring tillage, we give instead of hay sweet oat straw *ad libitum* with the same allowance of oats. We always, both in winter and summer, limit the quantity of water given to horses, and never allow a horse to drink at a pond or a trough, but offer them water in a bucket three times a day. In this way they never receive more than about two gallons at a time, which is ample for the largest sized farm horse. It is quite impossible to regulate the quantity of water the horses drink when led to a pond or trough. In the summer season when the animals are excited by hard work their thirst will often induce them to drink too large a quantity of water, which in our opinion frequently produces what is termed broken wind; and we believe, too, that it oftener arises from this cause than any other, for we never had a broken-winded horse since we left off the practice of leading them to a pond or trough for drink.

We must again urge on the attention of the home farmer that this is the time for making up the seed beds and drilling the seed of cabbage, &c., for summer and autumn planting. We have said before that the distance between the rows of plants should be about 15 inches, as this will give plenty of room for hoeing and cleaning the land, weeding and pulling the plants. The beds will therefore be conveniently made about 5 feet wide, drilling four lines upon a bed and a footway between each. In anticipation of the requirements of the farm we recommend the growth of plants of all the best varieties of cauliflower, also early and late broccoli, early and late sorts of market and cattle cabbages, as well as kohlrabi, Thousand-headed and Curled Scotch kale. It is now high time that the seeds were in the ground, because the young plants when early are more likely to avoid damage by the turnip fly. However, when they are attacked the best application is soot sown over the leaves whilst the dew is upon them, for this acts not only as a preservative against the enemy but as a manure when washed off by rain. When the home farmer is prepared with a lot of the best kinds of plants he may have plenty for use and some for sale. About a pound of seed, if the plants are uninjured, will produce about enough to plant an acre. In this way many acres of valuable crops may be grown either for the feeding of stock or for sale as vegetables for the food of the people. In this way, also, the plant of roots is much more certain when set or ploughed in under furrow than when trusting only to seeding in the field, besides which time is gained. Strong plants properly set when the weather afterwards proves either too dry or too wet will always thrive better than seedlings. Shepherds now, whether the flock consists of ewes and lambs or fattening sheep, on account of

the scarcity of roots will have to resort to artificial feeding stuffs. There is plenty of hay upon most farms although the quality is indifferent. It must be used liberally cut into chaff and spiced, especially for ewes with lambs. These should also at present have 1 lb. of decorticated cotton cake per day; and the lambs, when they can eat, should have the best of every kind of food usually given or at hand for use. Fattening sheep should have linseed oilcake with short allowance of roots. Store sheep must be kept as short of roots as possible, and have plenty of spiced hay. Cattle, too, will answer for good keeping; we think meat will be dearer.

CRYSTAL PALACE BIRD SHOW.

THE seventeenth annual Cage Bird Show at the Crystal Palace, Sydenham, was opened on Saturday last beneath the huge canvas awning fitted up at one end of the building. The Show was divided into sections—viz., for Canaries and Mules, British, Migratory and Foreign Birds. The Canary classes were upon the whole as well represented as formerly, except in the classes for Clear Yellow Norwich, Clear Buff Norwich, Jonque, London Fancy, no entries having been effected in the latter class. The two best birds in the Clear Norwich class were disqualified through being marked with dark feathers in the hocks. As regards general quality the Clear Buff Norwich class was much behind former years. The most conspicuous bird in the class suffered a somewhat similar fate to that at the late Alexandra Palace Show. The bird is good in every respect but in its tail, which again appeared in a most ragged state.

Crested Norwich, Belgians, Yorkshires, and Lizards were represented with the best birds of the day, whilst there was an increase in the number of Scotch Fancy breed of Canary, which reached no less than twenty-six specimens; and there was a severe competition in class 42 (confined to amateurs), no less than fifty-nine birds coming under the hands of the Judges for the special prize, a silver cup, offered by Messrs. Mackley of Norwich to the winner of most points in the class. Most of the birds were brought to the post in fine condition, and would have done credit to all-England exhibitors. We were not at all surprised to find so many birds disqualified in the non-pepper-fed Norwich classes, and regret that exhibitors do not strictly observe the conditions of the schedule. Classes are set apart for birds fed upon the cayenne food, and for some exhibitors to try to pass off specimens which have only partaken of a small portion of the stimulating diet is a mistake. In the Golden and Silver-spangled Lizard classes a few really first-class birds were exhibited, those from the north of England, which have been winning almost everywhere during the past exhibiting season.

One matter in connection with the Canary classes we deplore, that of cutting off the third prizes in such classes as Evenly-marked Norwich, Ticked-marked Norwich, the Lizard classes, the Yorkshire classes, and the classes especially for Goldfinch and Canary Mules. As to the alteration of converting the cages of six into cages of four, we do not think it wrong, for it is more easy for exhibitors to obtain four good birds than half a dozen. As a further improvement we would suggest a class for the best pair of birds either of the Norwich breed, Belgians, Lizards, or Mules.

(To be continued.)

THE LANGSHAN CLUB AND PRIZES.

I FREQUENTLY receive letters from secretaries of shows asking the Langshan Club to give cups and prizes for open competition. As we are obliged to resist these appeals I desire to state the reasons for doing so. The idea of instituting the Langshan Club did not originate with me, but at the request of some gentlemen I inaugurated the Club on the 21st February, 1877. Although the rules were submitted to me for approval I had nothing whatever to do with the framing of them. Rule the 2nd states "That the object and purpose of this Club be the honourable protection and extended cultivation of the Langshan fowl, &c." Rule the 13th, "That members only be eligible to compete for Club prizes." Before the Langshan was so widely distributed rule 13 had occasionally to be broken, but it places a salutary limit, and at present it would be most unwise to do away with it.

In connection with the Club I am sorry to have to revert to old grievances; and as they still exist, although in a different form, I feel it imperative to deal with this matter openly. In 1877 we received an application from one of the Committee belonging to the Weymouth Show asking us to contribute a cup for Langshans. This we gave for open competition, and it was awarded to half-bred Cochins. I had it from two sources that the cup bird had yellow legs! During 1878 I received a letter from a gentleman, who told me he had purchased eggs from the owner of the Weymouth cup bird, and that the birds hatched out from them were Cuckoos, and one entirely white. I exonerate the gentleman who claimed the cup birds at the Weymouth Show from any complicity in this matter; never having seen a Langshan in his life I believe him to have been honestly mistaken, and I fear the Club cups even when limited to members have not always been awarded to pure specimens.

Finding there was to be a class for Langshans at the Shrewsbury Show in 1879, at the last moment it was decided that the Club should give a cup. A day or two before the entries closed we received a letter from a gentleman asking to join the Club. For one entry our "new member" was awarded the Shrewsbury first prize, the Club cup, and a pair of oriental vases presented for competition. As the Club prizes are given to encourage Langshan classes at the various shows, and are intended for an increased number of recipients, I very strongly protested against these awards being lavished on one pen of birds. The oriental vases were returned to their donor, but the two cups went to the one entry. The same gentleman was awarded the first prize at Dorchester last year; he also received Mr. Morrell's cup at the Bath and West of England Show in June. This year the cup at Dorchester fell to his share, and—as stated by Mr. Buchan on page 1st—the same exhibitor has received the second prize in the Langshan class at Shrewsbury this year for a pair of birds with yellow legs! This, of course, casts very grave doubts on this gentleman's previous exhibits. These are by no means the only instances that have been brought to our notice, but I think I have said enough to show that rule 13 must be kept in full force for the present.

As there are likely to be large gatherings of Langshans this season I will on a future occasion give you the Club "standard of excellence" of the Langshan, and my own ideas as to what a perfect bird should be.—A. C. CROAD, *Manor House, Durrington, Worthing.*

P.S.—I think it right to state that we afterwards discovered that the Weymouth cup birds were originally sold as Black Cochins. The purchaser not considering them sufficiently Cochins in appearance thought they were probably Langshans, and entered them as such. The Judge having heard the Langshan spoken of as a bad Black Cochins naturally gave his award to the type he favoured most. The gentleman who claimed them at the Weymouth Show, never having seen a Langshan, also took the birds for pure. Had the breeder of these birds called them Cochins Langshans (why not Cochins Langshans as well as Cochins Dorkings or Brahma Dorkings?), this comedy of errors would never have been enacted. My only aim has been to keep the breed pure. I find I shall not be able to undertake the arrangements for classes at shows this season, neither can I receive the subscriptions for the Club. Anyone undertaking this work, really desirous of keeping the breed pure, I would gladly assist with what information or influence I may possess.

PEKIN DUCKS.

PURE breeds of Ducks are few. It is true that the Rouens and Aylesburys are very meritorious, and leave little to be desired in the way of useful Ducks: Black East Indians, too, are at once lovely in plumage and delicious on the table, but anything like the variety which we now have in the poultry yard is sought in vain among profitable Ducks. The acquisition, therefore, of a new and distinctive breed like Pekins is a great gain. We never remember any race of domestic birds so soon to have had its merits recognised or to have been so quickly distributed over the country. It cannot, we think, be more than five years since we first heard of Pekins, then shown alone by Messrs. Fowler, yet at every late show their numbers have far exceeded those of Rouens and Aylesburys. Though we possess some Pekins we do not pretend to have had great experience in the breed; but for those of our readers who have a fancy to try the new Chinese wonders we will give some description of them, and of what we believe to be their characteristic points and excellencies.

The form and carriage of Pekins are very peculiar, and strike the eye at once as different from that of ordinary Ducks, and only like those which we have seen on Chinese screens and pottery. The neck is much arched and swan-like in form; the head carried back, and the tail cocked up. There seems to be some difference of opinion among their admirers as to whether these peculiarities should be only moderately developed, or whether their exaggeration is a sign of purity of race. We incline to the latter opinion, and fancy that some of the very large birds which we have seen with these characteristics less prominently shown have a cross of Aylesbury blood in their veins to increase their size. The colour of Pekins is white all over, but not a pure white or even a creamy white. The best birds have a distinctly lemon hue throughout all their feathering, like that of white poultry when deep in the moult and while the sap fills their quills. Their heads are rounded, and should not, like the Aylesburys, form a line from the crown to the end of the bills; these are of a deep rich orange colour; the richer and more even the colour is the better. They not unfrequently have dark spots or stains on their bills, which are a great blemish and detract much from their value as exhibition birds. We fancy the colour of their plumage and bills must make them fitted for places where there is iron in the water, or where many oak leaves fall into it.

We formerly kept Aylesburys where we had to contend with both these drawbacks, and found it almost a hopeless business to keep their bills of the fleshy hue which is *de rigueur* in the exhibition pen. Pekins strike us as a breed which may be and are

successfully shown taken straight from the pond, and which do not require the preparation that other kinds do. Their size appears considerably greater than it really is. Our readers must not be misled into expecting to get them up to the enormous weight which the prize birds of the old breeds now attain at Birmingham. They are, however, a strong and quick-growing breed, and seem fit for the table at a very early age. As layers they are admirable. We have heard on good authority of Ducks which have laid on sixty consecutive days. All who have given them a trial seem to agree in praising them on this score. With such recommendations we cannot hesitate to advise those who want a handsome breed of white Ducks to invest in a pen of Pekins. At present we see no signs of their degenerating, though fears might well be entertained on this score, as it is believed that nearly all the exhibition strains are descended from the first importation of the Messrs. Fowler. We know, however, that there is another strain descended from an entirely different imported stock, and this when procurable may be of much use in refreshing stocks which show signs of degeneracy. This family has the especial Pekin characteristics, both of colour and form, most strongly developed. It is now in the hands of Capt. F. G. Coleridge and others, and will, we fancy, in time become generally intermixed with the more generally known strain.

We do not find our Pekins very fond of the water or very active in providing for themselves; but it would be rash to generalise from a short experience. We have found that among all breeds of Ducks there is in these matters a great difference between different stocks, probably from the way in which they have been reared. Those brought up under hens and away from water hardly ever care for it in the same way that those do which have grown up in more natural circumstances.—C.

VARIETIES.

WE hear that an Italian, Signor Cirio, has started a gigantic poultry farm combined with a market garden in the former Neapolitan territory, where he rents quite a tract of unproductive campagna.

— We understand that the Officers and Committeemen of the Poultry Club who retired by rotation at the end of last season have all been re-elected by the body of members, to whom voting papers are sent out. Those so re-elected are:—Vice-President, Hon. and Rev. A. Baillie Hamilton; Hon. Sec., O. E. Cresswell; Committeemen—R. A. Boissier, T. C. Burnell, A. Darby, and S. Matthews.

— THE DAIRY BUSINESS IN AMERICA.—The extent of this business may be gathered from the following figures:—The exports of dairy products for the year ending in June last were 141,654,474 lbs. of cheese made from about 165,268,558 gallons of milk, and 38,248,016 lbs. of butter made from 114,744,048 gallons, requiring the annual yield of 600,000 cows, giving 406 gallons. This was the largest exportation ever made in one year, and the receipts were 18,001,173 dols.

— DAMAGE TO CROPS BY WOOD PIGEONS.—At a recent meeting of the Lincolnshire Chamber of Agriculture this subject was brought forward. Mr. Cartwright stated that he had recently opened Pigeons, and in the maw of one found no less than 114 large beans, and in another 1112 barleycorns, three oats, and seven peas. He also found 917 sprouted barleycorns in another bird. During the winter he found 207 beech nuts in one, and added that the birds were most destructive at spring time with the young clover. Mr. Dalton said that in consequence of the ravages of Wood Pigeons he had had eight or ten acres of beans to plough up and reseed. Mr. Howard said that at this season of the year it was the custom for the tenants on the heath to meet every Wednesday night simultaneously in various plantations and shoot the birds. In Ashby village they averaged 150 birds. It was resolved "That in the opinion of this Chamber the damage done to crops by Wood Pigeons is excessive, not only as regards corn, but more especially as this time of year to the young clovers and other growing crops, and that landlords should be asked to insist on their keepers destroying them during the breeding time and at all other seasons." The Secretary was requested to forward a copy of the foregoing resolution to each of the landowners in Lincolnshire.

THE PHYSIOLOGY OF THE HONEY BEE—No. 4.

Locality.—This instinct is largely developed in bees. The first care of every queen, worker, and drone on its first flight is to circle round its hive in such a way as to mark its location with regard to surrounding objects. Once this is done the wanderer rarely forgets the spot. It makes a "bee line" to its hive from its pasture ground with unerring certainty. So finely developed is this instinct, that it will at once distinguish its own hive amongst a hundred others exactly similar, though placed within a yard of each other. It will find its way to a distance of six miles from its home, and will at once notice if the latter has been moved 6 inches during its absence. Bee-keepers must therefore be cautious in regard to any alteration of the position of their hives. The safest

plan is to move the hive a foot or two at intervals of two days or so—that is, during the season when the bees are flying daily. In winter, especially during a protracted period of cold, hives may be moved at one lift to their new location, though I have in early spring seen large numbers of bees return to the spot from which their hive had been removed three months before. This proves the fine memory the bee has.

Another plan frequently adopted and generally successful is to cause the bees to go through the form of swarming—that is, they are either driven or shaken from their combs into an empty skep, and thus carried to the new location and re-introduced. If neatly done, it will be found that scarcely a bee will return to the old stool. They mark their location on their next flight as if they had naturally swarmed. Fumigation by puff-ball or chloroform has much the same effect on them, though I do not recommend such methods. Still another way is to remove the stock that is to be shifted to such a distance that it will find itself in new pasture ground—that is, according to the season and locality, from one to three miles. It is left there for a week or two, and then brought back to the desired spot.

It has been remarked that queens also mark their location, and I rather suspect they do so with even more care than the worker. I have frequently had a queen take wing while I have been examining the comb on which she was, or when I have been attempting to seize her, but I never had a case in which she did not return to almost the same spot within a minute or two. I therefore make it a rule when a queen takes wing to leave everything *in statu quo*. The comb is held in the same position, and spectators are warned to stand perfectly still so as not to alter any landmark. Many queens are lost by hurried action during such a crisis. At one time I used to be very cautious about opening the boxes in which Ligurian queens are imported. It was always done in a closed room near a window. This precaution I now find to be more dangerous than if none be taken at all. I have opened such boxes about 150 times during the past season without losing a queen, and being in the open air any bees that fly find their way back unless unhealthy, whereas in a room they all fly to the window and do not return, and frequently the queen drops into some dark corner and runs the risk of being lost or trodden on.

Notwithstanding this instinctive care on the part of the queen, instances are too common where she goes into the wrong hive and is killed; this being commonly the result of placing the hives too near each other and having them too much alike. And I have known bee-keepers so thoughtless as to take an artificial swarm, or alter the position of a stock, while there was an unmated queen in it. I have lost a queen as a result of transferring a stock in such circumstances from a straw skep to a bar-frame hive. The queen had flown before, but was still unmated. On her next flight she failed to notice that she left a wooden hive, and on returning naturally went into a neighbouring skep and was killed.

Drones also possess the instinct of locality. Although seldom molested on entering a strange hive, they as a rule stick to the one in which they are bred, as those who have both Ligurian and black stocks can easily verify. They can also wander far from home, for I have known black queens to be fertilised by Ligurian drones that must have come a distance of three miles.

Although, properly speaking, this power of finding their home from great distances is rather acquired than instinctive, I cannot see why some should deny it to be an instinct at all. Homing Pigeons have no doubt to learn while being trained to do the same thing. But why cannot any breed of Pigeon be trained to it? Simply because the homing breeds are possessed of a specially developed faculty. I call it instinct.—WILLIAM RAITT.

BEE-KEEPING MADE EASY.—No. 1.

IN answer to a correspondent, "A. B.," the "Handy Book of Bees," published by Blackwood & Sons, contains in detail an account of my system of management, and the system has been unfolded to a great extent in the pages of the *Journal of Horticulture* during the last six years. For the benefit of this correspondent and others I will try to make plain the main features of my system in as few words as possible.

The taking of wings from queens, on which information is required, is an easy operation. In the middle of an April or May day when bees are at work a hive is smoked with fustian rags, turned on its crown and covered with an empty hive, rolling a cloth round the junction to keep in the bees. By drumming on the bottom hive the bees are driven into the empty one in about four minutes, when the empty hive is turned on its crown; the queen is looked for, seen, caught, and held between the finger and thumb, deprived of one wing, and put back with the bees into the old hive. This is how it is done with straw hives without fixed combs, and all is done in five minutes. With bar-frame hives driving is not resorted to. The combs covered with bees are lifted out one by one and examined till the queen is seen and caught. By mastering the bees with smoke both systems are easy if the operator has courage to look in the face a thousand bees, and without wincing pick up the queen from amongst them. Ladies and gentlemen who come here appear to be astonished that

the work is so easily and speedily done. After a queen has lost a wing no swarm will be lost from her hive. She herself may be lost in falling over the flight-board and not crawling back into the hive, but this seldom happens. The legs and wings of queens four years old are generally defective, and some of them in attempting to go with swarms fall over the flight-board. If they do not crawl back into their hives the bees of the swarm after their return find them, visit, dance, and hover about them in apparent commotion and concern. Taking wings from queens does not alter the instincts of bees or interfere with their internal preparations for swarming. It merely prevents the loss of swarms.

Feeding up for winter the bees of driven swarms is another simple and easy undertaking on which our correspondent desires instruction. It is not of much consequence whether the bees to be fed be in a straw or a bar-frame hive. Take the straw hive first. A small bit of guide comb is fastened in the crown of the hive; four or five cross sticks are pushed through it for the combs to be fastened to. Swarms may vary in size from 4 lbs. to 8 lbs., or in numbers from twenty to forty thousand bees. Five pounds of bees make a good swarm in autumn, which is generally placed in a hive 16 inches by 12. An empty flower pot saucer able to hold two quarts of syrup is placed on the board, a handful of chips of wood is thrown into the saucer, and the hive with the bees is placed on and over all. A few inches in length of half-inch or three-quarter-inch gas pipe is put through the hive and rests in the saucer. Through this pipe the saucer is filled every evening. If the outer end of the pipe is slightly bell-mouthed it will readily take the syrup without the use of a funnel. During the feeding process the hive should be well covered and its mouth contracted in order to keep the bees warm, expanded to their utmost bulk and busy in comb-building. Both warm weather and warm hives are advantageous to bees while they are secreting wax and building combs. "How much syrup should be given to 5 lbs. of bees in a 16-inch hive at the beginning of September?" From 20 lbs. to 25 lbs. of sugar boiled in an equal weight of water—or at the rate of 1 lb. of sugar to a pint of water, and given to the bees in fourteen days is quite sufficient to make a stock unsurpassed for excellence.

Hives thus formed are of great value. About one half only of the syrup is stored up for winter use, the other half is used by the bees in keeping themselves and in secreting the wax for comb-building. The same process should be followed with bar-frame hives, but the bees may be fed without a flower pot saucer, as there is not room for it on a level board below the bars; but boards could be easily dished out, or holes cut out of them, and troughs let into them for feeding purposes. I have said that the bar-frame hives fed into stocks in autumn should be treated similarly to straw hives. Usually they are not treated in this manner. Old combs are cut to fit the frames, tied in and placed in the hives to avoid the expense or waste of sugar in comb-building. So far good. Less feeding is necessary where things are done after this fashion. But after all the stocks thus formed are not so valuable and healthy as those that are filled with young sweet combs built by the bees themselves. Granted that 10 lbs. of sugar will be saved per hive by placing combs into the frames in the manner now described, but the hive itself will be of less value by 10s. or 15s. than the hive which has built its own combs. Every bee-keeper of experience knows that young combs are better than old combs, because bees amongst them work and thrive faster. Another consideration is this, That in all hives the combs are not built straight. There are curves and bends, and therefore the difficulty of fixing aright combs that have been built in other hives. If two combs bend or curve towards each other, part of both combs will go into disuse for want of room to use them. The practice of making up stocks by filling frames with old combs will ultimately be abandoned by all persons who keep bees for honey. I would not give a sugar-fed hive full of combs built by the bees for two or three hives artificially filled with old combs. In my article on profitable bee-keeping I said that in good seasons large hives became too heavy for keeping for stocks, that the bees were taken from them and fed into stocks. In such seasons I use pie dishes, soup plates, dripping tins, as well as flower pot saucers for feeding the swarms. With plenty of chips of wood or broken straw in them I scarcely ever find a bee lost or drowned in the syrup; and by filling the dishes through the tubes or pipes mentioned the work of feeding up stocks in empty hives is begun and finished without the necessity of touching the hives or even of uncovering them.—A. PETTIGREW.

OUR LETTER BOX.

BRAHMA PULLET UNSATISFACTORY (B. E. L.).—We fear your pullet has been ruptured, but cannot be quite sure of this till we know if she gradually gains strength or continues as you describe her—viz., "down behind," as it is called by poultry fanciers. You have done quite right in separating her from the cock, which has probably caused her malady. Keep her quiet and give her barley meal and bread and milk, omitting for the present the Spratt's food and kitchen scraps, as they encourage laying; and her best chance is to come laying till the damaged organs have regained some strength.

SOOT FOR PASTURE (Old Subscriber).—In applying soot to meadow land not less than 6 cwt. per acre should be sown; and in case the meadows are

cold and inclined to grow the small rushes it is better to add 2 or 3 cwt. of bone superphosphate per acre to the quantity of soot recommended.

BEETLES ON SCOTCH FIRS (O. M. A.).—The name of the beetle you have sent that is doing so much injury to your trees is *Hyleinus piniperda*. The abode and place of propagation of the perfect insect or beetle are in the pith of the young shoots of the pine, particularly in the side twigs. The beetle burrows for one or several inches below the terminal bud on the youngest shoots, eating out the pith straight upwards, and gnawing out again near the bud or through it. According to Bechstein, the beetle bores through shoots of the spruce fir when there are none of the Scotch pine to be had. The eggs are laid under the bark of sickly and felled pines, also on the silver and spruce fir, in the bark of which the maggot also lives. The food of the beetle is the pith of the young shoots of the pine, and the maggot lives on the stagnated fermented juice under the bark. The mode of its propagation and its enemies are the same as those of the common bark-beetle. We know of no remedy.

MAKING BEE HIVES (L. L. Kenrick).—We are not aware that small models of the various kinds of wooden hives are obtainable, nor are we able to supply working drawings for making hives. Details with illustrations are given of Mr. Ratt's, Mr. Hooker's, and Mr. Cheshire's hives in recently published numbers of the Journal.

FLOWERS FOR BEES (Idem).—Crocuses, hyacinths, wallflowers, nigella, borage, poppies, Centaurea Cyanus, mellilot, and Epilobium angustifolium are suitable for growing in the vicinity of bee hives; but the great bulk of honey is gathered from the blossom of fruit trees, fields of clover, limes, with other flowering deciduous trees, and heather.

SUPPOSED FOUL BROOD (E. A. G.).—We are glad to inform you that the comb sent is not infected with foul brood. The pollen is considerably mellowed, and the honey in many of the cells is in incipient fermentation; but there is nothing that the bees will not quickly put right as the season opens. We think it likely from the appearance of things that you are fed late with syrup that has been too thin or that very watery honey has been gathered by the bees which they have not been able to get into condition for sealing. We should recommend you to feed with cake, the recipe for this making of which you will find on page 476 of No. 976 of this Journal.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.				IN THE DAY.					
	Baromet. at Sea and Level	Hygromet- er.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature.		Rain.
		Dry.	Wet.			Max.	Min.	In sun.	On grass.	
1886.										
Feb.										
Sun. 22	Inches. 29.795	deg. 67.5	deg. 72.1	W.	deg. 42.0	deg. 45.8	deg. 35.3	deg. 60.4	deg. 27.5	0.06
Mo. 23	29.969	37.6	37.4	N.	40.5	41.4	34.5	47.3	27.6	0.06
Tu. 24	30.230	38.0	37.1	N.E.	40.1	41.6	36.4	45.9	26.3	0.00
We. 25	30.464	33.7	33.2	N.W.	39.3	46.6	30.3	43.1	25.3	0.00
Th. 26	29.839	45.4	43.4	W.	39.5	50.1	33.2	35.5	26.9	0.00
Fri. 27	29.878	38.6	36.9	W.N.W.	39.3	48.7	34.1	36.9	26.9	0.01
Sat. 28	29.504	48.0	44.8	W.	40.1	53.7	38.0	41.5	26.5	0.00
Means.	29.966	39.8	38.8		40.1	46.8	34.5	43.3	26.3	0.02

REMARKS.

22nd.—Overcast, damp, misty day.
23rd.—Fine morning, overcast and rain from 10 A.M.
24th.—Rain in early morning; damp, cloudy, cold day; fair evening.
25th.—Foggy in early morning; very fine bright cool day; moonlight night.
26th.—Slight rain in morning; fine day with bright sunshine; clear moonlight night.
27th.—Slight rain in morning, fair day, cold wind.
28th.—Wet morning, followed by a fine bright windy day, slightly overcast at times.
Cooler than the previous week, especially at night, there being five nights with frost on grass.—G. J. SYMONS.

COVENT GARDEN MARKET.—MARCH 3.

OUR vegetable market is sensibly easier, and all sorts of forced goods are now reaching us in better supply, such as Asparagus, French Beans, Peas, New Potatoes, and Cucumbers. The fruit market is quiet, importations being now nearly over.

FRUIT.

	s.	d.	s. d.		s.	d.	s. d.
Apples.....	½	steve	2 6 to 4 6	Nectarines	dozen	0	6 to 8 0
Apricots.....	dozen	0	0 0	Oranges	dozen	0	0 12 0
Cherries.....	box	0	0 0	Peaches	dozen	0	0 0 0
Chestnuts.....	bushel	12	0 16 0	Pears, kitchen..	dozen	0	0 0 0
Figs.....	dozen	0	0 0	dessert.....	dozen	5	0 0 0
Filberts.....	½	lb.	0 1 0	Pine Apples	dozen	1	0 0 0
Cobs.....	½	lb.	0 1 0	Plums.....	dozen	1	0 0 0
Gooseberries...	½	steve	0 1 0	Raspberries	dozen	1	0 0 0
Grapes, hothouse	½	lb.	0 12 0	Strawberries ...	dozen	1	0 0 0
Lemons.....	dozen	0	10 0	Walnuts.....	bushel	0	0 0 0
Melons.....	each	0	0 0	ditto.....	dozen	1	0 0 0

VEGETABLES.

	s.	d.	s. d.		s.	d.	s. d.
Artichokes.....	dozen	10	0 to 4 0	Mushrooms	pottle	1	6 to 8 0
Asparagus.....	bundl	10	0 15 0	Mustard & Cress	punnet	0	2 0 0
Beans, Kidney ..	dozen	100	2 0 2 0	Onions.....	bushel	3	0 0 0
Beet, Red.....	dozen	1	0 3 0	pickling	quart	0	0 0 0
Broccoli.....	bundl	0	9 1 6	Parsley..... doz.	bunches	6	0 0 0
Brussels Sprouts	½	steve	3 0 3 6	Parsnips.....	dozen	1	0 0 0
Cabbage.....	dozen	1	6 2 6	Peas.....	dozen	3	0 0 0
Carrots.....	bunch	0	4 0 6	Potatoes.....	bushel	4	0 0 0
Capicums.....	dozen	100	1 6 2 0	Kidney.....	bushel	4	0 0 0
Calliflowers.....	dozen	1	6 4 0	Radishes..... doz.	bunches	4	0 0 0
Celery.....	bundl	1	6 2 0	Rhubarb.....	bundl	1	0 0 0
Coleworts..... doz.	bunches	3	0 4 0	Salsify.....	bundl	1	0 0 0
Cucumbers.....	each	1	0 2 0	Scorzonera.....	bundl	2	0 0 0
Endive.....	dozen	1	0 2 0	Seakale.....	basket	0	0 0 0
Fennel.....	bunch	0	3 0 0	Shallots.....	dozen	1	0 0 0
Garlic.....	½	lb.	0 6 0	Spinach.....	bushel	5	0 0 0
Herbs.....	bunch	0	2 0 0	Turnips.....	bunch	0	0 0 0
Leeks.....	bunch	0	3 0 4	Vegetable Marrows	each	0	0 0 0

WEEKLY CALENDAR.

Day of Month	Day of Week	MARCH 11—17, 1880.	Average Temperature near London.			Sun Rises.		Sun Sets.		Moon Rises.		Moon Sets.		Moon's Age.		Clock before Sun.		Day of Year.
			Day.	Night	Mean.	h.	m.	h.	m.	h.	m.	h.	m.	Days.	m.	s.		
11	TH	Royal Society at 8.30.	50.4	32.2	41.3	6	24	5	56	6	5	6	57	1	10	2	71	
12	F	Quakett Club at 8 P.M.	50.4	34.0	42.3	6	22	5	58	6	21	8	11	1	9	46	72	
13	S	Royal Botanic Society at 3.45.	50.8	34.4	42.6	6	20	5	59	6	39	9	23	2	9	30	73	
14	SUN	5TH SUNDAY IN LENT.	50.6	33.6	42.1	6	17	6	1	6	59	10	34	3	9	13	74	
15	M	R. P. J. Sprengel died, 1833.	51.0	34.0	42.5	6	15	6	3	7	22	11	42	4	8	56	75	
16	TU	C. G. Nees von Eambeck died, 1868.	52.0	35.5	43.3	6	13	6	5	7	52	morn.		5	8	38	76	
17	W	Society of Arts at 8 P.M.	49.9	33.0	41.5	6	10	6	6	8	30	0	45	6	8	21	77	
From observations taken near London during forty-three years, the average day temperature of the week is 50.7°; and its night temperature 33.4°.																		

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COTTAGE GARDEN SHOWS.

IN the spring of last year it occurred to one or two lovers of gardens and gardening in a remote district of East Yorkshire, that if a small show could be started for the cottagers of the district it might tend to increase the interest felt in gardening pursuits, and, if rightly managed, might prove productive employment. But how to do so appeared a great difficulty. No one knew anything about a flower show. The cottagers had many of them never seen a show, the would-be committee were ignorant of details, nurserymen there were none, gentlemen's gardeners very few, and of money there was very little. But it so happened that somebody connected with the movement had been in the habit of gaining much instruction from a certain paper which appeared on Friday mornings called the *Cottage Gardener*, and somebody said, "I will write to 'our Journal,' it will help us if anything can;" and so the letter was written to those wise counsellors of gardeners in distress, the Editors, and lo! for three weeks the Journal was full of long letters from readers who had had the experience which we lacked, and who were good enough to give that experience to other members of our gentle craft. The result of it all was that a Committee was formed, and notwithstanding the wet season and the mud, the want of sun and the want of summer, a show was held on the 2nd of August, which proved, considering the season, very successful. In return, then, for our debt to the Journal for enabling us to start our show, we venture to offer a few details in the hope that others may be encouraged by our experience.

The first step was to form a good Committee representing the several villages and the several interests—landowners, parsons, farmers, tradespeople, and cottagers. It must be essentially a working Committee and one whose members would work harmoniously; and by carefully selecting such a Committee was secured. The more influential gave the weight of their influence, the less known gave time and trouble. A President and Vice-President were appointed, not merely ornamental chairmen, but gentlemen who carefully considered details and exercised their authority to prevent questions of detail being re-opened which had once been decided for the year. Then we proceeded to draw up a schedule, and having no funds in the Three per Cents, but only in the future, we determined to cut our coat according to the cloth and begin humbly. The prize list was divided into two parts—for cottagers in which money prizes were given of 3s., 2s., and 1s.; and an open class for all not *bona fide* cottagers, in which we did not venture to offer money prizes, but made honorary awards, and trusted (and not without good reason as the event proved), to the Committee and others to fill the classes and aid the Show. The rules were made as simple and short as possible, and only in one point will it be needful to amend them this year, that of making them more stringent against those who borrow, sometimes without the owner's leave, from others' gardens, and show the produce as their own. This is the one great evil of shows, and the most difficult to deal with.

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Special prizes were offered by several seedsmen and other tradesmen in the neighbourhood. Children's prizes were also given for collections of wild flowers, these classes being well filled. The agricultural interest was propitiated by prizes for eggs, butter, and Turnips. The subscription for non-cottagers was fixed at 2s. 6d., though, as may be supposed, we did not find it necessary to decline any larger sum which might be offered, and all cottagers became members on payment of 6d. Next year we intend to give admission tickets to subscribers at the rate of 2s. 6d. a ticket. The admission was very low, 1s. for the first hour of the Show, and 3d. for adults and 1d. for children afterwards. Notwithstanding this nearly £7 was taken at the gate, and we start this year with £11 in the bank. A tent was obtained from the nearest town, fifteen miles off, a local band discoursed the popular tunes of the day, and a grand cricket match between two local teams served to interest the non-gardeners and to fill our coffers. Posters and advertisements had been duly put out, and a fine day drew together a company well satisfied with friends' and neighbours' successes in the peaceful strife. The Secretary says this is not quite true, as some gentlemen whom the Judges had unaccountably, as they thought, passed over, gave him a very warm time of it for an hour or two; but I fancy he is not responsible for what he says about that afternoon, for Judges and Stewards, police and refreshment keepers, prizetakers, cricketers, and aggrieved exhibitors, kept him so constantly occupied that he actually dared to say that if we were to have two shows a year he should send in his resignation. However, he has not done so yet, and will, I believe, have changed his mind before the next show day.—A YORKSHIRE CURATE.

AURICULAS IN THE PAST AND PRESENT.

THE mild controversy that has arisen in the Journal between Mr. Slater and Rev. F. D. Horner has suggested many thoughts to me, more especially on the point most prominent in the discussion—the difference between the method of cultivation, &c., in the old times and in the present. No better representatives of the former and present days could be had. Mr. Slater has lived through what he believes to have been the palmy days of Auricula growing, while Mr. Horner is undoubtedly the champion grower of the present; and if I interpose a few words it is simply because I can look back a good many years and remember when Mr. Slater was in possession of the field, and I am yet endeavouring to cultivate a very favourite flower.

It must be now forty-five years since I first undertook to grow the Auricula, and through many changes of place and circumstances I have, with a few brief intervals, done something with them; at one time having but a few plants, then possessing a good collection; then obliged to part with them; then commencing again, and congratulating myself on having a good collection, when to me a hitherto unknown and unsuspected enemy destroyed my hopes and made me almost despair of ever growing them again, for I never heard or read of the abominable pest, the woolly aphis, until the last three or four years. In those now

NO. 1641.—VOL. LXIII., OLD SERIES.

far-off days I lived in the Emerald Isle, and around its metropolis there were then some of the most enthusiastic and best growers of the Auricula I ever knew, notably amongst them Dr. Plant of Monkstown. I was also acquainted with the Lancashire growers of those days, and on my occasional visits to London, which were always timed for the Auricula shows, I became acquainted with John Dickson of Acre Lane, Brixton, who then occupied the foremost place amongst growers for sale; besides Ginger, Page, and others that might be named, who used to bring forward their plants at the "Horns," Kennington, and at the Surrey Gardens, &c.; and those were the days when florists' flowers carried the day. There were in the neighbourhood of London between thirty and forty exhibitors of Auriculas, and shows were held at various places in the suburbs; while besides Lancashire, which always held the foremost place, Worcester, St. Neots, Northwich, Market Drayton, Doncaster, Dundee, and a host of other places held their exhibitions. Very different to the state of things now existing, but bedding-out and sensational gardening had not then come in, while probably the increase of our modern Babylon has tended not a little to diminish the growth (owing to the difficulties of ground, atmosphere, &c.) of the old-fashioned florists' flowers. The Tulip has almost disappeared from near London, Pansies and Pinks are rarely seen, Carnations and Picotees are few in comparison with former days. A considerable portion of the very fine shows of the National Auricula Society is contributed by northern growers, those about the metropolis numbering but four or five. Dahlia shows in the metropolis are nothing to what they used to be; Ranunculuses are hardly ever exhibited. Since those days the Rose has leaped into favour, and many who might have bestowed their attention on some of these old-fashioned florists' flowers cultivate it; and one can hardly quarrel with any amount of attention given to the queen of flowers. It will be thus seen that my acquaintance with the Auricula has been a tolerably wide one, and that so far as that is concerned I am qualified to speak.

In the days to which I allude it was always considered that the most rigid adherents to the strictness of rule prescribed by the florists were the northern growers, while laxity as to quality and requirements was considered a blemish on the southern growers; and I always used to consider the Irish florists to have observed a happy medium between the two. It was, and indeed is now, no uncommon thing in the north to see trusses reduced to three pips because the others had some trifling defect in the eye of the keen connoisseur, who would not venture to expose himself to the risk of being beaten by someone more particular than himself. Great stress was laid especially on the quantity of ground colour in the edged varieties; and some, therefore, which were highly esteemed by the London florists, and were always prizewinners there, were hardly even tolerated in Lancashire. Take, for example, such flowers as Dickson's of Acre Lane. He sent out several—Duke of Wellington, Duke of Cambridge, &c.; but they had this defect, and the Lancashire growers used to ask where the edge was, and whether they were not meant for selfs. Trusses were shown with any number of pips and too often coarse in quality. The Dublin florists were quite agreed with the northern growers on these points, but they were not so very particular as to the individual pips. They never allowed a truss in edged varieties to consist of less than five pips, or in selfs of less than seven. Great stress was laid, too, in those days upon the appearance of the plant, and especially when shown in pairs. It was considered necessary that the foliage should be stout and erect, the stems rising above it, but stout and bearing their truss without support; and when in pairs it was considered a great demerit to have one longer than the other—both had to be of the same height.

In comparing the state of things in the present time with those of the days I am writing of, I find that in many respects a great change has taken place both in the manner of cultivation and in the sorts grown. Mr. Slater has fairly enough described what was the condition of things in Lancashire in those times, and no one ever thought of growing Auriculas save in frames of the ordinary garden type. My dear old friend Mr. Jeans made a great innovation when he grew his in frames with plate glass, an innovation which did not spread, being expensive, and as I believe unnecessary. Of late years many growers, more especially those in the north of England, have grown them in pits. The Rev. F. D. Horner of Kirkby Malzeard, Mr. B. Simonite of Sheffield, Mr. Woodhead of Halifax, Mr. Booth of Failsforth, all grow them in pits, to which heat in one form or another can be applied. Both of

these were unknown to the older florists. The pit I consider an innovation worthy of all praise. You can get to your flowers under any circumstances of weather; you can detect more easily if anything is wrong; you are less liable to drip and the damaging effects of a cold blast, and you can more easily shade or protect from frost. I have adopted it myself and have found much comfort from it, but I have not thought of applying heat; this I find is as yet a northern institution, and only of late years. Now as the Auricula does not suffer from frost when the plants are dry, I can only imagine that the idea has arisen from the desire of exhibitors to have their plants in time for the shows, the seasons having so strangely altered during the last few years in England, for as to getting flowers to open flat by it, I have seen the most difficult ones shown quite flat without any fire heat. The 20th of April used always to be considered about the time at which Auriculas were at their best in or near the metropolis; but in neither of the three great Auricula shows held in London during the last three years could the northern exhibitors have put in an appearance had it not been for the application of heat, a fact to which the plants themselves in many instances bore unmistakable evidence; and although the testimony of such champions as Mr. Horner, Mr. Simonite, or Mr. Woodhead cannot be gainsaid I do not like it. It may be, as in the case of our Maidenhair Fern, *Adiantum Capillus-Veneris*, which grows so luxuriantly in the caves of Arran, on the west coast of Ireland, Cornwall, &c., and yet seems to luxuriate still more in our moist stoves, so the Auricula, originally an Alpine plant, may not dislike heat—but at any rate the application of it seems to have been more the work of the Auricula exhibitor than of the Auricula grower.

With regard to the material in which they are grown there has been a marked improvement. Simplicity is now the rule. In the earlier part of the century all sorts of nostrums were recommended, and the belief in them had not quite vanished forty years ago. Goose dung steeped in bullocks' blood, decayed night soil, sugar bakers' scum, and similar substances that had been recommended by Emmerson, Maddock, Hogg, and the older florists generally were things of the past; but I well remember the anxiety to get the decayed willow mould recommended, to have the manure used some five or six years old, the particularity with which the quantities were weighed out, and such like minutiae, now utterly disregarded. Good loam, decayed manure, cow or stable, not too old, and leaf soil form the staple of nearly all the composts employed; and I believe more depends on the quality of the loam than on anything else. Those who are able to procure such as can be obtained from Epping Forest, or what we used to use in Dublin, Kilmacnocks loam (the thin shavings of turf that covered the limestone rocks in the Wicklow mountains), have a great advantage. The more fibrous it is the better. I do not see that much change has taken place as to the size of the pots. No doubt in former days large pots were the rule, and there are some who adhere to them yet. The orthodox size used to be 6½ inches diameter and 7 inches deep; but Dickson of Acre Lane commenced the use of much smaller pots, and at the present day I think the larger-sized pots are the exception. They require undoubtedly more care than the smaller ones, as plants do not so readily fill the pots, and consequently they are more apt to become soddened and sour.

I come now to the very important point as to the improvement in the varieties cultivated. Forty years is a long time in the life of a plant. Look what forty years has done for the Pelargonium—the magnificent varieties of Hoyle, Foster, Turner, and others in the Show section; and then the rise and progress of the Zonals with the Tricolor, Silver, Bronze, and Nosegay varieties. How many hundreds, nay, thousands, of varieties have had their day, been exhibited as prizewinners, been run after by enthusiasts, and then thrown away to make way for their betters. But how has it fared with the Auricula? Amateurs and nurserymen have been busy with it, they have hybridised and raised thousands of seedlings, but how few have gained anything that is an improvement on those which were grown forty years ago! Good plants of the varieties I knew then would, except in one class, hold their own. With good plants of Booth's Freedom, Leigh's Colonel Taylor, Page's Champion, Litton's Imperator in green edges; with Taylor's Glory, Summerscales' Catharina, and Taylor's Favourite in white edges; with Netherwood's Othello, Spalding's Metropolitan, and Hey's Apollo in selfs, I should not be afraid of any of the newer varieties. All these were grown in my young days, and there are few if any of the newer varieties to beat

them. It will have been seen that I have omitted grey edges; and here unquestionably the newer varieties have far and away distanced the old. Waterhouse's Conqueror, General Bolivar, Hedge's Britannia, Fletcher's Ne Plus Ultra cannot be compared to such varieties as Headly's George Lightbody, Cheetham's Lancashire Hero, Kay's Alexander Meiklejohn, and others in this fine class; and however successful may be the growth of the Auricula now, I do not think it is in any way of thinking the old is better than my memory revels in the long rows of Booth's Freedom, Taylor's Glory, Hey's Apollo, &c., I used to see in Dr. Plant's collection, and that I still call him to mind as the very prince of Auricula growers.

The superiority which has always attached itself to the north in these matters still holds good in the productions of the new varieties. Headly, Walker, Traill, Kaye, Simonite, Lightbody, Campbell, Pohlman, and Read, whose names are attached to the leading modern varieties, are all northern men—unless, indeed, we must call the late Mr. Headly of Cambridgeshire a southern grower. Mr. Chapman and Mr. Turner have produced flowers; but Maria, albeit its exquisite ground colour, is not a first-class flower, while Ool. Champneys is not even a second-rate one; and Charles J. Perry is not, I think, to be compared with either Hey's Apollo ("Asia Poll" as the old Lancashire boys called it), or Spalding's Metropolitan.

Many growers are now busy raising seedlings, and much anticipation is indulged in of the wonders we are to expect; but a little moderation is desirable when we consider that for forty or fifty years Mr. Lightbody was carefully raising seedlings, and that he has left behind him but three or four first-rate flowers; that Mr. Traill was nearly as long engaged in it and has not left more. In truth, with all that has been said and done, Auricula growing and Auricula raising have their difficulties.

In this review of many years' experience many pleasurable and many sad thoughts arise. Many blanks have been made. Of those associated with me in my early days I hardly know of but one or two left; but amidst all the changes of time and place my love for the Auricula is still strong, and it will be a very great sorrow to me if I am obliged to relinquish its growth.—D., Deal.

SHANKING OF GRAPES.

In the excellent paper read by Mr. Nunn before the Wimbledon Gardeners' Society, and quoted in the Journal of February 19th, the author asks some pertinent questions concerning the shanking of Grapes which he considers have never yet been satisfactorily explained. I am under the impression that I have attempted to answer all the queries therein propounded, but as the subject is so important I offer no apology for returning to it. First, Mr. Nunn asks why the secondary crops which form on laterals should colour well without shanking, while the main crop shanks badly. My answer is that shanking is always caused by partial starvation; but not always, because the soil is not rich. As we know that some animals will starve where others of the same race would fatten, so it is to a certain extent with plants. Take a rough hardy peasant youth from the pure air of some mountain home, where he thrives on a diet such as many people would consider hardly good enough for pigs, and place him in a nobleman's establishment where prime beef and strong beer are unlimited. After a time, if he survives the change, he will grow to like his new fare and little work; but what do you think would happen to him were he suddenly returned after a lapse of a few years to his primitive diet? We find it comparatively easy to accommodate ourselves to additional luxuries, and when hard times come we make the unpleasant discovery that our system has undergone so complete a change that what were once thought luxuries have become necessities.

There is a quotation in the same number of the Journal from Dr. Lindley's writings to the effect that "a compost was never known to be too rich for Vines or Roses," which I should have no difficulty in refuting. It is true that the full effects on Roses and Vines of a compost which is too rich is seldom seen, owing to the mutilations which both are in the habit of receiving at the present day; but what about the different effects of a severe winter on Roses which are grown in half dung and those which are grown in ordinary stiff garden soil? I have never yet known a Rose of the Hybrid Perpetual class killed by frost unless it had been coddled up too much; and I may here mention that I have a batch of cuttings of Tea Roses, perhaps 150, in about a dozen varieties, which were inserted

last summer in a border on the north side of a wall and have had no covering whatever during the winter, and they are growing away now as if they had never been exposed to the slightest frost. I do not say that the same thing would have happened in Yorkshire, but I do say that people in the southern counties are not strictly accurate when they say the frost has killed their Roses.

But what has this to do with the shanking of Grapes? It is related in this way, as tending to prove that gross growth produced by an excess of stimulant causes a want of hardihood and a degeneracy of the organs necessary for self-support. If I understand rightly the Vine is not naturally a gross feeder as regards organic matter. It will thrive and bear abundantly on an almost bare rock, and I am told that the flavour of the fruit in such a situation is extremely good. Of course I do not advocate the bare rock treatment for this country, for I am well aware that the British gardener can grow better Grapes, at least in appearance, than can be found elsewhere; but I am thoroughly convinced that those who have the most manure in their borders are not the people who can show the best permanent results. There is a happy medium, and until Grape-growers return to this point we shall always hear of gross growth and subsequent shanking. In a poor soil Vine roots will be comparatively small but very numerous. Their little active rootlets will be searching in every direction for the necessities of life, while the growth above ground will be comparatively small, hard, and short-jointed. On the other hand, young Vines planted in a very rich compost will have fewer roots of a larger size, and which if not checked by being confined or occasionally cut will often run straight through the prepared border and ramify in the first hard material they can find. At the time of flowering there is an additional call for sustenance, and vegetable manure alone is found unequal to the task, and the plants suffer, as all overnursed plants and animals will which are not early taught to depend to a great extent on their own natural resources. A border may contain a sufficiency of every ingredient necessary for the well-being of a Vine, but owing to its faulty formation or its having an excess of vegetable manure the roots may be unable to reach the prepared material at the most critical time.

I have often drawn attention to the fact that Vine roots never commence growing till leaf growth is somewhat advanced, and the plants, therefore, at such a time must depend entirely on the sap stored up in them from the previous year. I can now add that the more vigorous the Vine is the greater is the proportion of leaf growth made before root-action commences. A high temperature also has the same effect. It consequently happens that the flower bunches are often visibly forming before root-action has commenced at all, and this is the exact time when the question of the strength of the stalk of the berries is finally settled. I consider, then, that shanking may be merely the impotency of the berry stalk itself caused by too hard forcing in the first stages of growth, or it may result from an insufficient supply through the roots. When bunches are formed on the after growths the roots are all in vigorous action, and besides there are at the time only a few bunches in the one stage.

The plan of planting Vines and other permanent plants in a large quantity of manure is much to be condemned. Give a sufficiently rich compost for a fair start, and be guided afterwards by appearances as to the amount of feeding requisite. Rich material can be added at any time and in any quantity, but it is not so easy to take it away when too much has been applied or to remedy the results of satiety.—Wm. TAYLOR.

BUDDING ROSES IN THE SPRING.

As I have not seen any mention of budding Roses in the spring out of doors, and have discovered its possibility entirely from my own experiments, it may be that many of your readers are wholly unaware that it can be done. I will therefore describe the *modus operandi*, so that they may try it and have the benefit if they succeed.

In April—earlier sometimes, depending on the season—any shoots of Briars left unbudded from the preceding autumn will be pushing into growth. These should be tried with the knife, and if the bark parts easily, as it will do if the shoots be growing, they should be budded in the usual way, except as regards the buds, which are to be procured as follows:—In pruning Rose trees in the spring (I prune mine generally on the 1st of April, but then I am in East Yorkshire and get the full brunt of the Easter winds) there will be found some fine,

healthy, and ripe shoots that have withstood the frosts unharmed. It is from these the buds are to be taken ; so if I wish to increase my number of any particular variety, and my stocks are not quite ready to bud, I leave one or two of these shoots unpruned until they are. Supposing my Briars are ready I cut off these shoots, and it generally happens that the topmost buds have pushed whilst the lower buds lie still dormant. These are the buds to use. Cut the shields in the usual way, and push the bud home with the knife haft by gentle pressure on the bud itself (of course there are no leafstalks to do it with as in the summer), care being taken not to injure it at all, or the knife point may be inserted into the bark of the shield about an eighth of an inch in front of the bud and so press it to its proper place. The operation requires care, but a little practice will enable anyone to manage it, and if done neatly nearly every bud will grow. The bud must be tied with cotton as usual.

The advantages of spring budding are many. Tea-scented Roses may be then budded without fear of their being killed by a severe winter : shoots must of course be protected to get the buds from. Another important thing is, your Briars may be turned into Rose trees without waiting another season. Blanks can be filled up. Buds can be used from the new varieties you have bought in the autumn or spring, and especially are these late-planted Roses suitable for the purpose, as the buds are a little later than the stocks. Then, again, it is an amusement at a time of the year when you have got all planted and trimmed up, and is well worth trying with any scarce or valuable variety, as cutting off a shoot at this time of the year is not like cutting them to death in the summer.

Manettis, those planted out for budding in the previous summer, can be treated in the same way, but are not so certain as Briars, though I have had some do very well, but have not tried very many.

After all perhaps not much is to be done by this plan, but that it answers is certain, as two friends to whom I recommended it have succeeded. I induced one of them to try it when cutting down a new variety last spring, and I asked him in the autumn how it answered, and he told me he had three or four plants all of them better than the one he cut down.

I will give an instance of how it may be useful to preserve a particular Rose. When in the north of Scotland last May there was a Rose tree in my friend's garden which had been late planted, and the buds had not moved at all. Choosing a shoot of ripened wood where the buds looked plump I cut it off, and on my arrival at Beverley a few days after I budded from it both into Briar and Manetti, and every bud grew. —F. BOYES.

TOMATO CULTURE.

ACCORDING to the remarks of Mr. Crossling, page 171, I fear he has misunderstood the drift of the recommendation to grow Tomatoes in shaded and odd corners, which he refers to as appearing in the Journal last year. Great results were not pointed out as being obtainable in this way, but where economy of space is a consideration the shady plan is not unworthy of a fair trial. I think it is better to gather a few dozen Tomato fruit from a small shady place than nothing at all ; and although plants in this position may not show so many fruit at one time as those more favourably situated, yet they will produce a large quantity of useful fruit. Last year I knew of plants trained to the shaded back wall in a vinery, 30 by 10 feet, that yielded over three hundred fruit that was gathered from May to September. Years ago this wall was always empty, therefore the Tomato crop must be considered a clear gain. Let those who have suitable places grow Tomatoes in them by all means, but at the same time let me ask those who have empty corners and shaded walls to try a few plants in them, and I think by the end of the season they will admit this is not such a very bad way of growing them after all.—A KITCHEN GARDENER.

TOMATOES that were grown out of doors last season were generally very scarce owing to the cold and wet. But to be more successful with them the plants should be stopped-in to two stems and repotted till they are in 16-size pots. When both shoots have shown two or three trusses of bloom stop them, and keep all laterals pinched off, and the fruit will soon set. Plant them out against a south wall the last week in June, and supply them freely with liquid manure in dry weather. If the season is favourable they will keep on bearing till frost appears.

As to varieties, most people have their own favourites, but for a very early supply I think none excels the Orangefield. The following are a few of the standard varieties—Acme, Stamfordian, Hathaway's Excelsior, Trophy, and Vick's Criterion, the latter being very productive.—SOUTHERN GROWER.

THE WILD GARDEN.

AFTER two severe winters, with few intervals of pleasant weather, the retrospect is gloomy and the garden prospects none too reassuring ; therefore a glance at something cheering, somewhere that we may look with pleasure on the very first tokens of returning flowers, is even more acceptable than usual. Let us, then, enjoy our spring flowers as best we may by watching their gradual unfolding from day to day, by talking of them, and may we not extend our pleasure by writing about them ?

In the wild garden there is a purling brook winding hither and thither, its higher banks clothed with Ivy, whence masses of Primroses peer forth with a brightness enhanced by the Ivy's dark shining foliage, and festoons of Periwinkle relieved by clusters of Snowdrops. On the slope are Violets and Crocuses, and various-hued Primroses escaped from the garden, with the fine arching fronds of the Hart's-tongue Fern just dipping their points in the water. Again, where the rock jets forward, covered with Lichen, Moss, and Spleenworts, through an overhanging canopy of golden Jessamine, we see Christmas Roses covered with scores of their flowers that are kept fresh by the shade long beyond their season, and surrounded by their beautiful companions the Hepaticas. The little moss-covered old bridge, the stones almost hidden by Pennywort, Ceterach, and three sorts of Spleenwort, with sprays of the Strawberry-like Potentilla trailing almost into the water, draping the archway, has here and there in the joints of its masonry a wild yellow Wallflower, which opens a few fragrant blossoms, the little structure beautifully buttressed by banks of Primroses and Violets. Where the glade stretches down to the brook, on the edge of the turf under the points of the overhanging branches, may be seen those vernal gems the Aconites, with a sprinkling of Windflowers in advance of their fellows, amidst masses of the vivid light green of the rising foliage of the Arum. Here a great boulder flanked by irregular masses of early Arabis and Forget-me-nots, as yet just showing their white and their blue flowers, and in front a carpet of the Cyclamens that flower in the autumn, but their lovely leaves remain clothing the ground till flowers are plentiful.

This hasty glance at a few of the harbingers of the numerous beautiful plants at home in the wild garden may draw attention to those that bloom later, and perchance save some of the struggling Narcissuses, Anemones, and Scillas which closely follow those that form the vanguard of the army of flowers, from the scythe or the hook.—RAOUL —, St. F.

ASPHALT WALKS.

IN reply to Mr. R. Inglis I may mention that owing to the scarcity of good gravel, and the damp climate in Ireland causing moss to grow on badly gravelled walks, some people in my neighbourhood have had their walks covered with gaslime and coal ashes. When properly done the surface is as firm, solid, and smooth as any asphalt. We have had our garden walks done in this way for two or three years, and have just now done all the narrow paths through the kitchen garden. It is quite a simple process, and as the coal ashes and gaslime are to be had at the gas house in the town not very far distant only for the trouble of carting it away, it is decidedly cheap.

There must be a firm foundation to begin with—we use small gravel and cinders. It must be made quite level ; the gaslime is then spread over that about 1 or 1½ inch deep, and well rolled or flattened with the back of a spade. Over that is placed a thinner layer of the coal ashes or rather dust ; this is well rolled too, and the walk is finished. The rain runs off it, no wheelbarrow leaves a track on it, and no weeds or moss grow on it. The colour is a dark grey.—SLIGO.

BRITISH FERNS.—On page 509, December 25th, 1879, *Ophioglossum vulgatum* is said by Mr. Eadon to have only one variety, named *O. lusitanicum*. That plant is not a variety of *O. vulgatum*, but a distinct species, for its fruiting season is in winter time, while *O. vulgatum* is in perfection in July. There

is a variety named *O. vulgatum* var. *ambiguum*, which was found a few years back in the Scilly Isles by Mr. Curnow, and last summer the same variety was found near Barmouth by Mr. Charles Bailey of Manchester. These, I believe, are the only known habitats for the var. *ambiguum*, while *O. lusitanicum* is confined to the Channel Islands.—JAMES PERCIVAL.

CYPRIPEDIUM SPECTABILE.

THERE cannot be too much said in favour of this lovely Orchid, as it possesses merits which should make it a general favourite with all plant-growers; and when its perfect hardiness is taken into consideration with its present inexpensiveness there is no reason why everyone should not possess one of the very best perennial Orchids. The plant is easily distinguished from all others. It grows from 1 to 2 feet high, the stems being more or less covered with leaves of a light green colour and conspicuously veined. The flowers, which are borne singly or from two to four on the stems, are very showy; the sepals and petals are spreading, ovate in form, the petals being much the widest, pure white in colour; the lip is very much inflated, of a rich rose colour, sometimes nearly crimson. The soil best suited for it is good peat and coarse sand, with some sphagnum chopped up fine and mixed with the peat. If grown in pots several should be placed in a large pot and kept plunged in moss or fibre in a shady place. When well grown it is a most beautiful plant for exhibition purposes, and it can be readily forced.

It can be equally well grown if planted outside in peat and sand in a shady place or on the rockery, where it is quite at home with many of the Primulas, Dodecatheons, and Ferns. It forms a lovely companion for Ferns. The stems springing up from among the light green fronds of the Lady Fern are exceedingly attractive, and the plant thoroughly enjoys such a home. We have had it planted in old stumps with other rarities, when it seemed to be peculiarly happy.—T.

GALVANISED WIRE.

ACCORDING to my experience galvanised wire is no more injurious to trees than any other equally unyielding substance. Close tying is very apt to cause gumming, especially on young vigorous growths, and the same thing follows if they come into close contact with wall nails, the result in both cases being a partial or entire loss of the branch. To prove this I enclose a report of Balgown Nectarine, which I believe was injured by friction with a wall nail consequent upon careless nailing, as, although much of the branch above and below the nail is brown and shrivelled, the gum exuded from under the shred only. The tree from which the branch was taken is on the open wall and is young and healthy.

I do not agree with your correspondent "Essex," who states on page 159 that the injury to Peach and Nectarine trees "is really the result of frost-bite." Frost may be injurious, but only in so far that it completes, or at all events precipitates, the already commenced work of destruction. What convinces me of this is the fact that last autumn I lost two strong branches from a Grosse Mignonne Peach planted in an early Peach house, the temperature of which has certainly never been near the freezing point. The fault lay in the unnoticed tight tying, gumming being the first intimation of the mischief done. The bark rapidly shrank and turned brown both above and below the injured points, and the leaves flagged and withered. The two branches were cut away to below the injured part with good results, as the retained parts are now making strong growth. Another long branch only slightly injured was retained, and this season it has broken well, and is swelling fruit above and below the injured part, near which in both directions for several inches it is quite bare of leaves or fruit. In all probability the growth beyond this bare place will eventually collapse.

I am inclined to think some varieties are more addicted to gumming than others, as the two mentioned are the only varieties affected among several grown under precisely similar conditions. For the future twisted ties will be eschewed, as although strong and of neat appearance, they are apt to injure both the young and old wood.—W. IGGULDEN.

THE experience of "Essex" (page 159) does not agree with mine. I first observed the great amount of injury done to the shoots about October 25th. At that time I was removing as many of the leaves as would part readily from the shoots in

order to expose the branches as much as possible to sun and air, and at that time I cut out below the wound the shoots most affected, and not likely to be of any further use. I forward you a few of the small branches, so that you will see that the mischief was not done lately. On pruning the trees last week I saw only one or two instances of a newly cankered shoot. In tying trees to any kind of wire my practice is to twist the tying material once round the wire. It was so in this case, but it did not prevent the wire damaging the shoots. If it can be proved (as in the case of "Essex") that the frost acting on the wire does the mischief, the remedy will be very simple—viz., let the trees loose early in the autumn.—ROBERT D. LONG.

[The shoots injured during the summer are in a much worse state than those affected during the winter.—EDS.]

YOUR correspondent "Essex" is of opinion that frost is the cause of the injury done to Peach shoots, but frost, I think, will not do any harm provided the wood is thoroughly ripened; and if the wood is green or imperfect severe frost will do mischief whether the tree is fastened to the bare wall or tied to wire. My practice is, as soon as the wood is ripe in the autumn to open the ventilators and leave them open night and day throughout the winter, unless when there is danger to the glass from strong winds. I have never yet seen any damage done to the trees by frost, although many of the shoots are in close contact with the wire. The borders were so hard frozen in 1879 that it was with difficulty I got them dressed preparatory to starting the trees, even after firing for three or four days. This to me is conclusive evidence that neither frost nor galvanised wire will injure the shoots of Peach trees if they are properly matured. I think the real cause of many dead branches that we have heard of lately is attributable to a bad state of the roots; and if inquiries were made I think it will be found that trees have suffered most in a heavy clayey soil. Perhaps those who are complaining will give all particulars as to the state of their borders and to the condition of the roots. The injury, I think, arises from the trees feeding on some ingredient hurtful to the building-up of fine, fruitful, healthy branches.—JAMES DICKSON, *Arkleston, N.B.*

PEACH PRUNING.

UNLESS "J. S. W." (page 162) is residing in a far more favourable climate than I am, it is probable that he will change his views respecting Peach pruning. He says, "It is not necessary to cut back well-ripened Peach shoots." I ask, Where will he find Peach trees, indoor or outside, thoroughly ripened to the points of the shoots this year? The sunshine was far too limited to ensure this. I employed every means last year to ripen the wood on the Peach trees in the forcing houses here, and at pruning I cut back as usual to a triple bud, except on shoots where I could find no wood bud existing, but on the points. These, of course, I left full length. I now find on the unshortened shoots that the wood bud in the point has refused to grow, and so I have a useless shoot, whereas on the shoots I cut back to a triple bud the growth is healthy and there is a good set of fruit.

In the unheated houses I adopted all possible means to ripen the wood, but felt sure after all it was not "perfectly" ripened. In pruning some of these last week I left the shoots very much thicker than usual, and cut them down to a point that I considered thoroughly ripened. In doing this I feel confident that unless injured by frost when in bloom the trees will bear a crop of fruit.

With respect to the trees outside, I find those I planted last spring, having made strong but unripened growth, are killed almost to the roots. On old-established trees I find a profusion of buds on the old wood. A little higher up the fruit-bearing wood is completely killed, so that the only course open to me in this case is to cut back to the lower buds and strive to produce a healthy growth. Your correspondent "J. S. W." says, "as generally practised and recommended in books;" I say that in a season like the past a man should use his own judgment, as last year was an exceptional one.—ROBERT D. LONG, *Thornes House, Wakefield.*

PERMIT me to say, in reply to Mr. Luckhurst, that the questions he now raises (page 179) have absolutely nothing to do with his former statement, to the effect that the practice of "thinning the fruiting wood, but shortening little if any of it" (a clear and correct definition of the "extension system") was

inimical to fruitfulness and the general well-being of the trees. It was this statement, not his particular practice, that was called in question by me, and it was for your correspondent to refute the very distinct contradiction I offered to his assertions if he could, but which he has not attempted. If he desires to see the practice, which he says we can expect any good results from in successful operation, he should visit Drumlannrig, Floors Castle, Brayton, Thoraby Park, and elsewhere, or even Wortley, after which I think he will admit that mere "assertion of opinion" is on his own side only.—J. S. W.

FAILURE OF BRUSSELS SPROUTS.

ON page 178 Mr. Muir refers to Brussels Sprouts failing, and to a large extent he thinks the cause of failure is late sowing. I think that their destruction in many cases is not due to this cause, as mine do not appear to be injured in the least. The principal batch of plants here were planted from seed sown on April 5th, the variety being that which is sold in this neighbourhood as the same that Mr. Hinds claims credit for selecting. The last batch was sown towards the end of April, the seed having been obtained direct from Mr. Hinds, and is known as "Otterspool Improved." In 1878 I had between three and four hundred plants from Otterspool, and tested them against other varieties, and then formed such a high opinion of Mr. Hinds' Sprouts that I again obtained seed from him for 1879. I consider this variety is far superior to any I have been able to obtain. They should not be planted closer than 3 feet apart, and will then produce sprouts of an immense size and furnished close to the ground.

I think the cause of failure is due in many cases to the plants being too thickly planted—excluding light and air, which are essential to properly harden and mature their stems to enable them to withstand the winter's severity. When planted at a proper distance I cannot see the utility of the system, so frequently practised, of removing the lower leaves. I have proved this, especially during the past winter. In severe weather the foliage droops downwards and must naturally protect both the stems and the sprouts. I have not a word to say against early sowing, but everyone has not the opportunity of raising the plants under glass. Good crops of Brussels Sprouts can be obtained from seed sown outside in April, and the plants will stand the winter just as well as those sown earlier.—WM. BARDNEY.

ROYAL HORTICULTURAL SOCIETY.

MARCH 9TH.

Few of the Society's meetings thus early in the year after such an unfavourable season have been brighter or more interesting than the one held on this occasion. Plants were exhibited in large numbers, one side of the conservatory being entirely occupied with groups of Orchids, Cyclamens, Cinerarias, and miscellaneous flowering and foliage plants, while in the Council-room were arranged a number of rarities of considerable interest horticulturally and botanically. The Fruit Committee had nothing whatever to do, for there was not a single entry of fruits or vegetables.

FLORAL COMMITTEE.—Dr. Denny in the chair. The principal nurserymen's groups were arranged in the conservatory, and one of the first to be noticed was that from Messrs. Osborn & Sons, Fulham—a large and ornamental group of plants very tastefully arranged. Rhododendrons, Azaleas, Guelder Roses, and Spiræas formed the bulk of the group, a few plants being employed to lighten it, and the margin was composed of Crocuses, Scillas, and Iris reticulata in pots placed alternately. The general effect was remarkably bright and pleasing. A silver Banksian medal was deservedly awarded by the Committee for this handsome exhibit. Mr. J. Aldous, florist, Gloucester Road, South Kensington, obtained a similar award for a neat group of Palms, Ferns, Hyacinths, and Lilies of the Valley. The two latter were remarkably good, some spikes of white Hyacinths being unusually large, and bearing good bells. The group would, however, have appeared better had more brightly coloured flowering plants been employed in conjunction with the Lilies and Hyacinths. Mr. William Bull, Chelsea, was adjudged a silver medal for a fine group of Orchids and choice plants in excellent condition. The chaste and sweetly scented *Plumna fragrans*, the orange-coloured *Ada aurantiaca*, *Odontoglossums*, *Dendrobiums*, *Masdevallias*, and *Lycastes* were all well represented. *Epacris omoseiflora nivalis flore-pleno* is a remarkably pretty double white variety, somewhat resembling in habit *Epacris purpureocens*. Several new hybrid Rhododendrons of the *jaeminiflorum-javanicum* type were shown, including some with very delicately tinted wax-like flowers. *Oncidium Kramerianum* was bearing large and deeply coloured flowers, which resemble but surpass the Butterfly Orchid, *O. Papilio*.

Mr. B. S. Williams, Upper Holloway, exhibited a group of *Cyclamens* very well flowered, and some of good size and substance. One variety, Brilliant, was noticeable for its brilliant crimson colour. Several of the white varieties were also in vigorous health. A bronze Banksian medal was awarded. Messrs. Barr and Sugden, 12, King Street, Covent Garden, staged a large group of *Cyclamens*, comprising about 140 plants. They were all in 48-size pots, the vigour and size of the plants being remarkable. The flowers were noticeable for their great size and substance. Cut blooms of the lovely *Iris reticulata* and its variety *Krelagel*, together with blooms of *Megaseas*, were also shown. A silver Banksian medal was awarded. Mr. John Wills, South Kensington, was awarded a bronze Flora medal for a group of *Dracena terminalis alba*, a very useful plant for decorative purposes, and very clearly variegated. The plants exhibited were in small pots, but in excellent health. Messrs. James Carter & Co., High Holborn, exhibited plants of a "new blue *Primula*" named *Lady Probyn*. The flowers were of a rather dull pale lavender blue tint, but not sufficiently distinct and ornamental to justify the Committee in awarding it a certificate, though they expressed a desire to see it again upon a future occasion. There is no doubt but that this is a step in the right direction, and may possibly lead to better results. For the group of *Primulas* a bronze medal was awarded. Messrs. W. Paul & Son, Waltham Cross, sent nine boxes of superb *Camellia* blooms, comprising about 180 flowers. One box of *L'Avenir* was specially noticeable; the flowers of this variety are very regularly imbricated, of a bright pink colour with a faint streak of white down the centre of each petal. Countess of Derby is also a very good variety; the flowers are well formed and of a delicate pink hue. Countess de Hainsault, flowers neat and delicately suffused with pink. Madame Lebois, flowers of moderate size, well formed, and of a warm pink or crimson tinge. Many other excellent varieties were also shown, the old *Alba Plena* and *Imbricata* being in good condition. A collection was also staged in the Council-room, a vote of thanks being accorded by the Committee.

Mr. Wiggins, gardener to Henry Little, Esq., Hillingdon Park, Uxbridge, exhibited some extraordinarily fine *Cinerarias* and *Primulas*. Of the former some of the flowers were over 3 inches in diameter; the colours also were unusually rich and good. Extremely deep purple, crimson, maroon, and blue were well represented. The plants were also remarkably vigorous and healthy. The *Primulas* included some good whites. One of the latter was in a small 48-pot, and bearing over nine trusses of excellent flowers. *Primula Meteor* was awarded a first-class certificate; it is of dwarf habit, and the flowers of brilliant crimson hue. A *Cyclamen* was also exhibited, one of the finest ever staged, over 2 feet in diameter, and bearing more than a hundred fully expanded white flowers of great size and excellent form. A cultural commendation was awarded. *Amaryllises* were shown in extraordinary vigour, one specimen bearing no less than ten flowers on two escapes, one with four and the other with six. A large group of miscellaneous plants was sent from the Society's garden at Chiswick; *Abutilons*, *Ferns*, *Imantophyllum miniatum superbum*, and *Wistaria sinensis* being very freely employed. The latter plants were 4 or 5 feet high that had been forced similarly to *Lilacs* and *Guelder Roses*, and their fine racemes of fragrant purplish flowers were very attractive.

In the Council-room a number of plants were staged, some of the most noticeable being those from Messrs. James Veitch and Sons. This collection comprised new and beautiful plants, including Orchids, *Amaryllises*, *Ferns*, and other plants. A first-class certificate was awarded for *Polystichum tripteris*, a neat species with pinnate fronds, bipinnate at the base. A cultural commendation was accorded for *Dendrobium crassinode Barberianum*, with two long growths bearing about thirty flowers each. The fine lilac-coloured *Primula pulcherrima* and the rich deep red-coloured *Azalea indica Souvenir de Comte de Gomer* were shown with several bright *Amaryllises*. Plants of the "red Gloire de Dijon," the *Rose Reine Marie Henriette*, were also exhibited. A collection of Japanese *Abies* was also staged. Mr. Thomas Speed, The Gardens, Chatsworth, was accorded a vote of thanks for a fine specimen of *Benanthera coccinea*, over 6 feet high and bearing two large panicles of flowers that had, however, been somewhat damaged in transit. Mr. J. King, gardener to G. Simpson, Esq., Wray Park, Reigate, exhibited some new *Abutilons*, for one of which named *Purity*, bearing flowers of good size, a second-class certificate was awarded. Mr. J. James, The Gardens, Redles, Isleworth, exhibited cut flowers of *Cinerarias* of superb size, form, and colour. A first-class certificate was awarded for plants of a very distinct and pretty variety—*Master Harold*, the flowers of excellent form and bright crimson colour with a narrow circle of white in the centre. Mr. Robert Greenfield, The Priory Gardens, Warwick, obtained a first-class certificate for a novel double *Cineraria* named *Mrs. Thomas Lloyd*. The plant was of dwarf habit, the flowers being perfect little crimson-purple balls about 1½ inch in diameter.

Mr. H. Cannell, Swanley, sent plants of *Cineraria Intensity* with good flowers, the colour of which was a deep rich purplish blue, very distinct and pretty; also plants of a pale lilac blue *Poly-*

anthers, *Primula elatior cærulea*. He also exhibited plants of *Fuchsia penduliflora*, for which a first-class certificate was awarded. The leaves are long and elliptical; the crimson flowers being tubular and borne in pendulous corymbs. Messrs. E. G. Henderson & Son, Pine Apple Nursery, Maida Vale, contributed a collection of double *Primulas*; the double white *Princess of Wales* and *Blushing Beauty*, and the lilac-tinged *Miss Eva Fish*, were the most noticeable. Mr. H. Harding, the Gardener, Orton Hall, Peterborough, was accorded a vote of thanks for flowers of *Clanthus pumiceus* and *C. Dampieri*, the latter being extremely fine. Mr. W. Rapley, gardener to G. Brand, Esq., Bedford Hill House, Balham, sent a *Cineraria* with flowers of great size and rich crimson colour. Mr. B. Dean, Ealing, sent some bedding *Primulas* and *Polyanthuses*, *Primula lilacina* and *P. auriculiflora* being very pretty.

NOTES AND GLEANINGS.

At a General Meeting of the Royal Horticultural Society held on Tuesday last, Dr. Masters, F.R.S., in the chair, the following candidates were duly elected Fellows of the Society—viz., Mrs. Saunders Abbott, Sutton Abbott, F. J. Alexander, Geo. A. Ballard, Rev. W. B. Banyard, William Brett, Mrs. Fullarton, Henry Garbutt, Lord Garvagh, M.A., J. P.; B. Hardy, Mrs. G. H. Jupp, Robert Lathbury, H. R. Pinder, J. R. Starling, John J. Thornycroft, William Tubbs, and John Winckworth. Dr. Masters afterwards delivered a most interesting lecture on Japanese Conifers, which ought to have been better attended.

— M. LEVET's new TEA ROSE, *REINE MARIE HENRIETTE*, which was described as a "red Gloire de Dijon," is likely to prove a very useful variety. It is now flowering in Messrs. Veitch's collection at Coombe Wood, and the colour is very rich, bright crimson suffused with scarlet. In growth and character this Rose resembles *Cheshunt Hybrid*, to which it will form a worthy companion. It is even a better grower than the free-growing *Cheshunt* variety. The demand for *Reine Marie Henriette* has been so great that the stock of fine plants is nearly exhausted. The Roses in pots at Coombe Wood, several of which are flowering and others in various stages of development, are exceptionally fine; and shortly the Roses on walls—*Belle Lyonnaise*, *Cheshunt Hybrid*, *Gloire de Dijon*, *Maréchal Niel*, and others will give hundreds of grand blooms. The Roses in the nursery have fortunately escaped injury by frost, and thousands of plants have been sent to France to aid in filling the blanks caused by the great severity of the weather there.

— In Messrs. Osborn's nursery at Fulham HARDY PLANTS are just becoming attractive. The most noticeable are the single and double red, white, and blue *Hepaticas*, the latter being remarkably bright. Little patches of the different varieties planted alternately in sheltered borders have a most pleasing effect. Red and white *Daphnes* (*D. Mezereum*) are laden with flowers, and render the air perfumed for several yards, while the white Spring Snowflake (*Leucojum vernum*), the lovely blue *Scilla siberica* and *S. bifolia*, the purple *Bulbocodium vernum*, and the large-leaved *Saxifrages* (*Megaseas*), such as *S. ligulata rubra* and *S. pulcherrima*, all assist in imparting a cheerful appearance to the borders. Among the shrubs the dwarf *Rhododendrons dauricum* and *proceus* are flowering profusely, especially the latter, which, when seen at a short distance, bears some resemblance to *Azalea amena* both in habit and colour.

— In a frame at the above nursery the beautiful *XIPHION RETICULATUM* is also flowering, and as treated there it is most ornamental. Eight or ten bulbs are placed in a 32-size pot containing rich light soil, and are then assigned a light airy position in a cool house or frame, where the deep purple flowers are produced somewhat earlier than they appear outside.

— NEAR the Irises was a frame full of *CROCUSES*, including many good varieties, and some of especial excellence. One of the most distinct is *Sir Walter Scott*, the flowers of which are streaked longitudinally with pale lavender upon a lighter ground colour. *Sir John Franklin* has large well-formed flowers of a warm purple shade, while *Mont Blanc* is one of the best whites.

— THE houses are gay with the numerous varieties of *AZALEA MOLLIS*, plants of such great value for decorative purposes early in the year that it is surprising they are not more extensively grown in gardens. The colours are so bright and varied, the flowers so freely produced, and the culture so easy, that they can scarcely be surpassed as spring-flowering plants.

— In Mr. Bull's nursery, Chelsea, there is now an excellent display of ORCHIDS in flower, including a large number

of species and varieties. *Odontoglossums* are particularly numerous, most of the best forms being represented. *O. Pescatorei*, *O. Halli*, *O. Alexandra*, *O. cirrhosum*, *O. gloriosum*, *O. Phalaenopsis*, and *O. Rossi* are all in fine condition. *Cattleyas* are flowering well, notably many varieties of *C. Trianae*, which exhibit a great diversity in colour, not the least attractive being the pure white form. *Dendrobium nobile*, *D. Wardianum*, *D. Devonianum*, *D. Paxtoni*, *D. cucullatum*, *D. crassinode*, and *D. primulinum*, and many other species of this beautiful genus are flowering profusely, the plants appearing remarkably vigorous. Among *Oncidiums*, *O. reflexum* and *O. membranaceum* are the most noticeable; while *Cypripediums* are represented by *C. Boxalli*, *C. villosum*, *C. Dayanum*, and *C. Harrisianum*. *Cologynes* and *Masdevallias* are very fine, especially *M. Harryana cærulescens*, the flowers of which are unusually large and richly coloured.

— THE prize list of the ROYAL CALEDONIAN HORTICULTURAL SOCIETY for the present year is now published. The Spring Show will be held in the Waverley Market on the 7th and 8th of April, the Summer Show in the same place on the 7th of July, and the Autumn Show on the 8th and 9th of September. As usual the schedule is a very large one. At the Spring Show the chief prizes are, in the gardeners' class, for eighteen *Hyacinths*, the first prize being seven guineas; for four *Azalea indica*, first prize, £5; the same sum is also offered as first prize for a table of plants. For six Orchids £6 are offered. In the classes devoted to nurserymen the largest prizes offered are for *Rhododendrons*—£6, £4, and £2. The Summer Show is not on such an extensive scale, and at the Autumn Show the large prizes are devoted to fruit. A collection of twelve dishes has £4, £2, and £1 as the prizes. Good prizes are also offered for other collections, and for Grapes. Cut flowers are well provided for, but small prizes are offered in the vegetable classes.

— AT the ordinary meeting of the METEOROLOGICAL SOCIETY, to be held at 25, Great George Street, Westminster, on the 17th instant, at 7 P.M., the following papers will be read:—"Thermometric Observations on board the *Cunard B.M.S.S. Algeria*," by Captain William Watson, F.M.S.; "On the Greenwich Sunshine Records 1876-80," by William Ellis, F.R.A.S., F.M.S.; "On the Rate at which Barometric Changes Traverse the British Isles," by G. M. Whipple, B.Sc., F.R.A.S., F.M.S. At 8 P.M. the discussion on the papers will be suspended, in order to afford the Fellows and their friends an opportunity of inspecting such instruments as have been sent in for exhibition.

— Two correspondents have written to us complaining that a spurious variety of the SCOTCH CHAMPION POTATO is in cultivation, and is sold in the markets. We can only suggest that those who are purchasing seed for planting should obtain it from trustworthy dealers, who cannot afford to risk their reputation by distributing spurious stocks.

— THE SOUTHAMPTON HORTICULTURAL SOCIETY will hold their Summer Exhibition on July 31st and August the 2nd, the Chrysanthemum and Fruit Show being fixed for November 16th and 17th. The schedule enumerates a large number of classes, in many of which liberal prizes are offered. One stipulation in the regulation deserves to be adopted by many other societies—namely, imposing a fine of 2s. 6d. upon exhibitors who withdraw from competition without giving notice previous to the day fixed for the Exhibition. The Society continues in flourishing condition, and a substantial balance of £100 is announced.

— ONE of the finest displays of PRIMULAS we have seen in a private garden is at Garbrand Hall, Ewell. Mr. Child is known to be a skilled cultivator of plants generally, and for some years he appears to have devoted special attention in selecting superior varieties of this popular flower. One house is entirely filled with plants of his white variety, which is noticeable by the size, form, purity, and substance of the flowers, which are produced in whorls of unusual size. The red variety is equally large, the colour being purplish crimson, and the effect produced by the strong well-grown plants is very rich. The foliage of both varieties is deeply cut, and the entire collection has a very beautiful appearance. A batch of white *Cyclamens* with large well-formed flowers also attract attention. The plants are admirably grown, and the variety is found most useful for decorative purposes.

— AFTER six years' service as head gardener to G. A. Everitt, Esq., Knowle Hall, Warwickshire, Mr. J. W. SILVER has been appointed gardener to Ayscough Fawkes, Esq., Farley Hall, Otley, Yorkshire.

— THE Summer Exhibition of the COVENTRY HORTICULTURAL SOCIETY will be held in Stoneleigh Abbey on July 12th. No less than 127 classes are enumerated in the schedule, providing for the exhibition of plants, cut flowers, fruit and vegetables.

— WIMBLEDON HOUSE GARDENERS' IMPROVEMENT SOCIETY.—During the winter months for the past ten or eleven years Sir H. W. Peek, Bart., M.P., has with great kindness provided a substantial repast fortnightly for the gardeners of Wimbledon and the surrounding district on their meeting in his gardens for the purpose of reading essays on horticultural topics and discussion thereon. The session of 1879-80 was brought to a close on Monday evening last, when Mr. Wright, of the *Journal of Horticulture*, read the closing essay on the "Shanking of Grapes," in reply to Mr. Nunns, who, in a previous paper alluded to the non-shanking of Grapes under certain circumstances (see page 132) that he had never seen explained. At the close of Mr. Wright's lucid and instructive essay, Mr. Nunns and the gardeners present expressed their complete satisfaction at the way in which the knotty questions had been answered, and an unanimous wish was expressed that the paper be published for the benefit of gardeners throughout the country. Hearty votes of thanks to Sir Henry and Lady Peek for their great and valued privileges afforded to the gardeners of the neighbourhood, to Mr. Ollerhead for the able and courteous manner with which he had carried out the wishes of Sir H. and Lady Peek, and to Mr. Wright for his excellent paper, brought one of the most numerously attended and interesting meetings of the year to a close. —J. W. MOORMAN.

CHOICE HARDY PLANTS.

Anemone apennina alba.—This lovely variety of the old *A. apennina* is one of the best hardy plants we are acquainted with. The flowers are very similar in size and form to the type, but as pure white as the Snowdrop, while they last even longer in perfection. It is much stronger in growth, having large trifoliate leaves of a bright green colour. It is most easily obtained by dividing the slender rhizomes. As a border plant it is invaluable, while it is also adapted for the rockery and wild garden.

Anemone palmata.—This is another very beautiful species of Windflower. It is very dwarf in habit, with palmately divided leaves of a deep green colour, the divisions being very narrow. The flowers, which are solitary on short stalks, are about 1½ inch across, of a deep shining yellow colour. It flowers early in the spring and is very hardy. It is increased by dividing the rhizomes, although the latter may now be purchased so easily and cheap that the loss would not be great. It flourishes well in a warm well-drained part of the border or in a sunny place on the rockery. It is also known as *A. lobata*.

Houstonia carulea.—Among the cultivators of alpine plants there are but few who are acquainted with this plant, and a smaller number who possess it. It certainly does not lack beauty, and good plants make a very handsome addition to a small rockery. It is easy to grow either in pots or on the rockery, and is readily increased. The plant grows in dense cushions with small deep green ovate leaves. Flowers on slender more or less branched stems about 3 inches high; the corollas are half an inch across, white, slightly tinged with blue—hardly sufficient to warrant the specific name, however. Some growers use peat and sand; I prefer loam, leaf soil, and sand in equal parts.

Primula nivalis.—This is one of the most chaste of our hardy Primulas, being of free growth and very diminutive as compared with *P. denticulata*, *P. acaulis*, and similar species. The leaves are more or less ovate-spatulate, covered with glandular hairs. Flowers produced on rather short peduncles, bearing them slightly above the foliage in very large clusters, and when the plant has several shoots the heads are very numerous. It flowers very early in the spring, and is a lovely little plant for the edges of hardy plant borders. It requires a well-drained and rather shady position. It is most at home on the rockery, where it forms a pretty feature for a long time. It may be increased by dividing the roots, or seed may be saved, especially if a plant is flowered in a cold frame or cool house. The seed should be sown as soon as ripe.

Ranunculus amplexicaulis.—This plant when in flower is generally admired. The leaves are ovate, tongue-shaped, clasping the stem, of a glaucous green colour. The stems grow from 9 inches to a foot high or more, producing numerous pure

white flowers exactly similar in form to the common Buttercup. They last a considerable time in beauty during May and June, and the plant is perfectly hardy, while its value for border or rockery ornamentation cannot be doubted, as it is very distinct.

Draba gigas.—This is one of the earliest flowering of the Drabas. It forms dense cushions, very much resembling some of the Mossy Saxifrages. In the spring it is crowded with small white flowers, when it is very pretty. It is a wonder it is not employed largely for spring bedding, also other species, as they are very beautiful and are past their best before the summer display can be planted. It is easily increased by division of the roots and by cuttings placed in a cold frame or shady border under a handlight.—R.

ARRANGEMENT OF PIPES FOR HEATING.

To "A NOVICE" who asks on page 173, How can the rest of the piping be set at a dead level if the flow rises from the top of the boiler and the return enters near the bottom? My reply is as follows:—Instead of giving a flow pipe a gradual rise of say 1 foot in 50, I would give it a sudden rise at its point of connection with the boiler, then run it on a level to its farthest point, bringing the return pipe back either by the side or beneath the flow as most convenient, and giving it an abrupt dip to the bottom of the boiler; by which arrangement the greatest advantage will be taken of the difference in weight of the flow and return water. This will render the matter quite plain to your correspondent.—G. DUFFIELD, *Winchmore Hill*.

IVY SCREENS.

I DO not know whether any of the readers of the *Journal* have ever planted Ivy screens for windows; but as they are so effective and so easily made, and this being a good time to begin them, a few hints on the subject may not be amiss.

A box is made the length of the window for which the screen is required; in fact, a Mignonette box, but a little deeper and rather stronger. Good drainage is placed in the bottom, and then the soil, which should be pretty rich, is well rammed down. In this fix four, five, or six upright stakes (canes are very suitable), of the height you wish your screen to be; nail two or three across, one within 3 or 4 inches of the top one midway, and if required a third near the bottom. This makes quite a firm foundation, and wire can be stretched across if the spaces between the sticks should be too wide. Then plant three or four good rooted cuttings of Ivy, say three for a small box. The Ivy will grow well during the summer, and as it grows twine it backward and forward through the framework. When the shoots reach the top bend them back and interlace them again, as the screen should be leafy all over and not show bare stems, "like quills upon the fretful porcupine." The small-leaved Ivy is, perhaps, the prettiest though it is the slowest to grow, but I have at present one beautiful screen in a wide sunny lobby window of the large, quick-growing, Irish Ivy, which is very effective. In the box I always keep a few very small Ferns, and in spring I dot a few Scillas and Crocuses through them, and they look very gay. I first saw these screens in the flower market in Amsterdam, where they are sold in large quantities of every size to suit the different windows.

The Dutch make great use of Ivy, and the arrangement of it in the Zoological Gardens at Amsterdam is one of the great features of those fine gardens. I will describe the mode in which it is grown there in a future number.—BUSY.

EXHIBITION POTATOES.

OF late years Potatoes have occupied very prominent positions on the exhibition tables, the majority of prize schedules apparently being considered incomplete without a class or classes for them. This is as it should be, as these competitions act as a stimulus to that high culture necessarily practised by the most successful. The International Potato Show, no doubt, has done much to foster a real love for Potato culture among a few especially, equalling in intensity that of many others for Rose culture. The only unfortunate part of the business is the fact that some of the most handsome varieties, and which invariably take the premier prizes, are of very poor quality, and the sooner these find their proper level the better for all concerned. Shape and size at present seem to have most weight with the judges, but eventually quality will have to be taken into consideration, or the is-

ternational Society in particular will have much to answer for, in that it has the effect of bringing into prominence many worthless varieties of which the only recommendation is a "fine appearance." Take the International Kidney for instance, to which so many first prizes have been awarded, and that in the majority of cases is really unfit for the table.

Large collections ought not to be grown by private gardeners, but should be left to those in the trade and enthusiastic amateurs. In the first place because but few have the requisite space to spare on which to grow them in sufficient quantities to pick from, and are unable to buy all the new varieties as they are distributed, thus being at a manifest disadvantage; but more especially because these large collections are very unsatisfactory for the table supply. No employer should object to his or her gardener growing a reasonable number of varieties for exhibition purposes, for as a rule fine Potatoes are not obtained from light crops, quite the reverse being the case, the employers, therefore, really being the gainers by this inducement to extra good culture. Having already written upon "Potato Culture" (page 151), further remarks are uncalled for beyond the observation that it is very advisable to prevent, by deep digging, the tubers coming into contact with strong manure, as that disfigures them, and I believe induces coarseness in some varieties. The soil about the sets should be well pulverised, and if inclined to be at all adhesive should have a quantity of light vegetable or leaf soil worked into the rows, otherwise coarse unshapely tubers will be the result.

I grow but few varieties of Potatoes, and for this reason am not competent to give a very reliable selection; and catalogues, too, are not to be relied on, simply because many varieties are described as being of good quality, when in reality they are quite the reverse. The following selection kindly sent to me by a very successful grower of the "noble tuber"—viz., Mr. C. W. Howard, Bridge, Canterbury, was made from a collection comprising seventy-five varieties, and may be depended upon as being a thoroughly good one. Mr. Howard's opinion of the merits of the table quality of each is impartial and based on actual experience.

The best twelve for exhibition are Edgcott Seedling, white kidney; Early Vermont, red kidney; Schoolmaster, white round; and Scotch Blue, all of good quality; Snowflake, white kidney; Woodstock Kidney, white; and Model, white round, all of fair quality; Pride of Ontario, white kidney, may be substituted for Snowflake; International, white kidney; Trophy, red kidney; Red Emperor (Carter's Maincrop), red round; Gramplan, red round; and Porter's Excelsior, all of poor quality. The next best twelve are American Purple Kidney, of extra good quality; Veitch's Improved Ashleaf, white kidney of good quality; Early Coldstream, white round; Climax, white round; Rector of Woodstock, white round; Ashtop Flake, white kidney; and Crimson Walnutleaf Kidney, of fair quality; Triumph, red round; Early King, white kidney; Lye's Favourite; Blanchard, coloured round; and Garibaldi, coloured kidney—all of very poor quality. Superior, red kidney, may be included in the first twelve, but is very subject to disease.

The soil in Mr. Howard's garden is principally rather rich black loam of good depth and resting on a gravelly subsoil. It is what might be termed a good Potato soil. During the past seven years he has grown and thoroughly tested two hundred varieties, and may therefore be considered an authority on the subject.—W. LEGGULDER.

NEWTON SEEDLING STRAWBERRY.

WITH regard to the origin of this Strawberry I desire to say that it was raised by me in 1864 from a cross between Keens' Seedling and Black Prince. I named it Newton Seedling because I resided at Newton, and no man named Newton has any right to call it Newton's Seedling. I showed a basket of fruit in Covent Garden in 1865, and afterwards showed it to the late Mr. Cuthill of Camberwell, the raiser of Black Prince, to whom, at his request, I sent some runners.—T. W. CHALONER, Rector of Newton Kyme.

BARMOUTH JOTTINGS.

I WENT to Barmouth, Merioneth, on February 24th to select sea sand for potting purposes, which we use exclusively, and find it answer for nearly everything if selected where the sea has not touched it for some years; in fact I find that the small quantity of salt which the sand contains is rather beneficial than otherwise to most plants. In visiting Barmouth I was

agreeably surprised to find that many plants which require protection some ten miles inland seemed quite at home there. In front of the Corsyddol Hotel I noticed *Euconymus* from 8 to 10 feet high, evidently enjoying their position. In the same place was a splendid row of single yellow Wallflowers in full bloom, double red Daisies were in flower, *Myosotides* were producing their flowers. I also noticed at other places in this sheltered locality large *Myrtles*, which had doubtless been out of doors for years, *Laurustinus* in full flower, and to judge by the enormous flower stalks still remaining the *Hydrangea* is a grand seaside plant. *Rhubarb* (unprotected) a foot high. Broccoli and Kales seem not to have suffered at all, and the latter were producing abundance of sprouts 5 to 6 inches in length.

Although in Dolgelly we had 5° of frost on the morning of my visit there was not the least frost at Barmouth, and I was informed there has scarcely been any frost there this winter, the high hills to the north and east of the town thoroughly protecting it in those directions. Potato planting was in full progress. The spring frosts that we are afraid of do not harm them here. The lowest temperature in January was 33°, in February 46°. This is very different from what most gardeners have experienced this winter.—GEORGE COOKE, *Nannan Park Gardens, Dolgelly, N. Wales.*

IRISES.—No. 4.

OF all the Xiphions none possesses such a variability of colouring, such strange markings, and such striking combinations of brilliant hues, as those known in gardens as English and Spanish Irises. The surprising diversity of these handsome flowers never fails to awaken admiration, and it may almost be considered fortunate that they are not of longer duration, for they would be likely to render us dissatisfied with many other occupants of our gardens. Very aptly have they been compared with Orchids, which they rival in colour, fragrance, and beauty, if not in peculiarity and grotesqueness of form. The eye wanders over a bed of these plants in full bloom with continual delight. There is such freshness in the tints and such abundant novelty that satiety is out of the question, and every glance only conveys additional pleasure to the mind. Why plants with so many charms can be neglected it is hard to say; and yet, although they can now be obtained at such extremely moderate prices that they might be employed to grace the humblest garden, they are comparatively rarely seen. It cannot be that they are difficult to grow, for a well-drained border of rich light soil in a warm sunny position suits them admirably, and all the attention they require is lifting the bulbs every two or three years; indeed, that even is not absolutely necessary, for the young offsets or bulbs, which most of the varieties produce very freely, may be severed from the old plant with a blunt-pointed stick, and after being kept in a dry cool place for a short time the young bulbs can be planted out. This plan obviates disturbing the old bulbs periodically. With attention to these few matters anyone can easily grow some of the most beautiful of the bulbous Irises, and having once obtained a stock of good varieties, the number is readily increased both by bulbs and seed.

The Spanish Iris was named by Miller in his "Gardeners' Dictionary" *Xiphium vulgare*, and from that Mr. Baker derives the modified title *Xiphion vulgare*, under which name the typical form is represented in the annexed engraving. This species is, as the popular name implies, a native of the Spanish peninsula, where its range is somewhat extensive both vertically and laterally; but it is not confined to that country, for it also occurs in the south of France and in Corsica. The plant is a very old inhabitant of our gardens, for it is one of those which Gerard tells us he had in his garden towards the close of the sixteenth century; so that, although the exact date is unknown, it cannot have been introduced to this country much less than three hundred years ago. This Iris also early attracted the attention of the Dutch growers, who cultivated it very successfully, raising many good varieties. They imported them to England, and the Dutch bulbs were soon regarded as the best that could be obtained. Bulbs are still imported from the continent, but some of our own nurserymen also grow large numbers of named varieties.

Xiphion vulgare is distinct in habit from those already described, being much taller, the stems often exceeding 2 feet in height, and bearing very long narrow somewhat flaccid leaves. It resembles the English Iris, *Xiphion latifolium*, but has smaller bulbs and flowers, the latter being produced in June; is

more slender in habit, and though slightly less gorgeous in colouring, the flowers of the varieties exhibit more peculiar combinations of tints, mottled and dashed in a singular but attractive manner. The flowers in the typical form are of a

lilac purple hue with a yellow blotch upon the falls, and are slightly fragrant, suggestive of Coriander seed. They are not, however, nearly so beautiful as some of the varieties. The latter are seedling variations from the type, some of which



FIG. 20.—XIPHION (IRIS) VULGARE.

have possibly originated from crosses between the English, Spanish, and other Irises. The colours in these forms range from pure white through innumerable shades of blue, violet, purple, yellow, brown, and bronze. *Xiphion lusitanicum*, a native of Spain, which has been described by some authorities

as a distinct species, is considered by Mr. Baker as merely a variety of the Spanish Iris. It differs chiefly in the greater proportion of yellow in the flowers. The following named garden varieties are some of the best—*Czar Peter*, *Bella Donna*, *Montrose*, and *Telemachus* have beautiful combinations of blue

of purple and yellow in their flowers. Berengaria, Harold, Lady Rowena, and Vespasianus exhibit a variety of shades of yellow and bronze. Perle d'Overveen is blue, and Bella Esdre is white. The unnamed forms are extremely numerous, and when a hundred bulbs can be purchased for less than 5s. who would be without such handsome hardy plants?—L. CASTLE.

LATE AUTUMN PEARS—PITMASTON DUCHESS.

In appearance this is one of the most noble of all Pears, and in quality is one of the best—at least this is our experience of

the fruit grown under favourable conditions in the southern counties, and we have no reason to suppose that it is not also good in other districts, for the tree is of free growth and appears to possess a hardy constitution. Although this variety is not so widely cultivated as the best of the older Pears, yet many trees must now have produced fruit in various counties, and it will be useful to know with what results.

The Pitmaston Duchess is a large handsome Pear, generally even or a little undulating in its outline, and sometimes rather prominently bossed. The skin is smooth and fine, of a pale lemon colour, thickly covered with patches of delicate cinna-

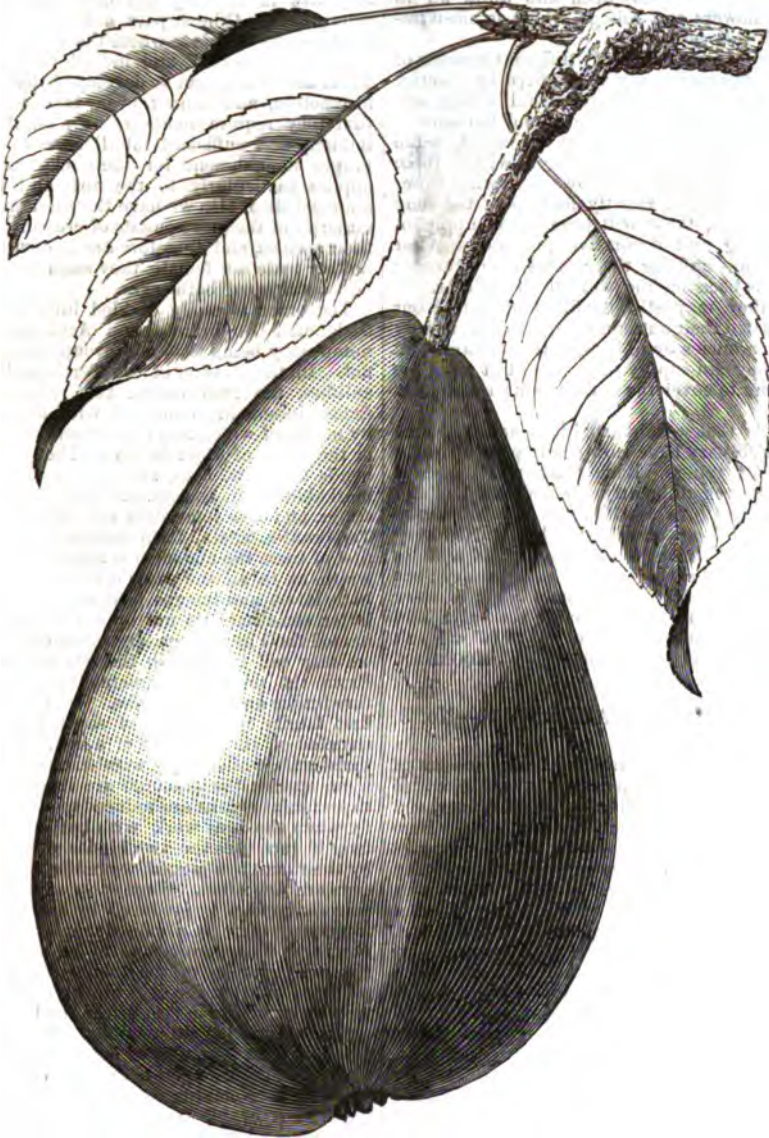


Fig. 30.—PITMASTON DUCHESS.

mon-coloured russet, with a large patch round the stalk. In appearance it is not unlike a good specimen of Marie Louise grown against a wall, when the skin is bright and smooth. Eye large and open, set in a wide cavity. Stalk about an inch long, stout, and inserted either level with the surface or in a small narrow cavity. Flesh very tender and melting, very juicy, exceedingly rich and sugary, with a brisk refreshing flavour and a delicate perfume.

It ripens in some places about the end of October, but in others it comes into use in the end of November.

The specimen figured was grown by Mr. Rivers of Sawbridge-

worth on a tree in a 10-inch pot, and well represents how admirably Pears are adapted for that mode of culture when in the hands of skilled cultivators.

PRUNING ROSES.

THE rapidity with which the uppermost buds of Rose bushes have pushed into growth with the last few days of genial spring-like weather is surprising, and indicates the necessity of pruning as soon as possible. I have frequently observed that plants which have been left unpruned until late in the

season have made active growths from the uppermost buds, whilst early pruned plants have remained dormant for some time after pruning, only starting into active growth with the warmer weather. Therefore I advise amateurs and others that have not yet pruned their Roses to do so without delay. Carefully examine each tree, and with a sharp knife or a pair of secateurs remove all wood that is not strong and healthy. Wherever the wood is found to have turned black from the effects of the frost it should be cut away altogether, but in some instances near a strong growth it may be found only injured on one side, and in that case if pruned to the nearest joint it may heal and support its new growths. Prune all Roses if possible to an eye on the outer side of the shoots; this if persevered in will keep the heads open and allow air to circulate amongst the flowers and foliage, which is most important in forming well-shaped heads.

Roses that vary in habit require slightly different systems of pruning, much of which can really only be acquired by practice and observation; but it is necessary to prune all strong and rigid growing varieties, such as Etienne Levet and Baronne de Rothschild, to the most prominent bud on the shoot, while weaker growing varieties will require pruning in within three or four plump buds from the old wood. Dwarf-growing Roses if required to cover the ground rapidly may have the long strong shoots pegged down, these will produce a supply of useful blooms for cutting and decorative purposes. After pruning collect the cuttings and dig the ground over, turning in the manure which has been on the soil all the winter. If any vacancies occur they may still be filled up, for if our nurserymen have exhausted their autumn supply they generally make provision for emergencies by placing both standards and dwarfs in pots, when they can supply them almost at any time by charging a trifle more to cover the extra labour required in preserving them.

Roses in Pots.—Plants that were started into active growth during January and February have now made good growths and are nearly ready for tying. Each shoot will require a stick to support it. Search diligently for the maggot, and keep down green fly; also give a stimulant of cow manure and soot. Maréchal Niel Rose under glass has started very freely, and will require the shoots regulating, and if aphides are numerous fumigating and syringing will be necessary; but it is not wise to syringe after the earliest buds begin to show colour, or the water is apt to remain around the calyx and cause the flower to decay. A temperature of 45° to 60° will suit both this and other Roses in pots admirably.—J. W. MOORMAN.

CHAPTERS ON INSECTS FOR GARDENERS.—No. 3.

NEW SERIES.

In the large order Hymenoptera, which embraces insects of very varied size and appearance, there is not exhibited so notably as in some other orders beauties of form, colour, and marking, though it includes some handsome species. Here are placed the bees and ants, insects which not only surpass all their brethren in diligence and sagacity, but which may even be compared to their advantage with many animals of superior organisation and hundreds or thousands of times their dimensions. Despite their differences of form and size, there is a marked general likeness amongst the imago or matured insects in this order, though some of them bear close resemblance to the two-winged flies, or the four-winged species of the Neuropterous order, dragon-flies, may-flies, &c. Surveying the order as a whole and in its groups we perceive that, if there are in it a few foes to the gardener or the agriculturist, the number of friendly species is far greater. We need only now refer to the host of parasites familiarly called ichneumons, which prey upon destructive larvæ, especially upon those of moths and butterflies, and to the indefatigable labours of many of the bees, known to be of valuable service in the fertilisation of flowers, for Hymenopterous insects are mostly lovers of flowers, robbing them of their honey, their pollen, and sometimes also carrying off portions of their petals for purposes of nest making and nest lining.

These insects have four wings, which are naked and membranous, small in relation to the body, yet capable of carrying it rapidly along; they also, in some instances, produce very loud vibrations. Under any circumstances the insects are reluctant to walk except those which, like the neuter ants, are unprovided with wings, and their agility is remarkable. The pliant abdomen is often attached to the thorax by a narrow waist, which is easily snipped in two, a mode of execution

ladies occasionally practise upon wasps. A strong force of muscles centres in the thorax and head; the latter has generally large eyes. The mouth is always furnished with horny upper jaws or mandibles; the lower jaws in some, as among the bees, are reduced to plates, serving to sheathe the tongue. This organ, in fact, is an extension of the under lip, and long in most species, coiling under the breast when not in action. There are examples, however, where this tongue is very short. All the Hymenoptera undergo a complete metamorphosis. The pupa is enclosed in a silken cocoon. In the character of their life as larvæ we find astonishing differences, as thus described by Prof. Duncan:—"Those of one family," he says, "are sufficiently developed when hatched to take care of themselves; they live in full daylight and can walk, nearly resembling caterpillars. Others pass a hidden existence because they must live in the place where the eggs out of which they have come are deposited, and indeed they never care to wander. There are some again so developed that they have no means of locomotion, and cannot even take their food themselves, so that they require mothers, or a staff of nurses gifted with industry and sufficient intelligence to find a safe place and proper nourishment for their charges." This last remark applies particularly to the ants and to some of the bees; amongst them also we have the singular circumstance that the majority of the race consists of creatures that do not propagate their species, and therefore are known as "neuters." Though neither male nor female, they seem to unite in themselves the best qualities of both sexes.

The order is easily divided into two groups, scientifically designated Terebrantia and Aculeata, the distinction most noteworthy being that one group has stings and the other has not. In the division of the Terebrantia are the sawflies, the gallflies, the ichneumons, the ruby-tails, stingless, but the female insects are equipped with an ovipositor or egg-placer, by means of which they can cut and pierce vegetable substances or the skins of other insects. The Aculeata division comprehends the ants, bees, and wasps, many of which lead a remarkable life in society, and here the females are armed with stings, and also sometimes the neuters or workers. Then the Terebrantia, again, form naturally two subdivisions. In the first of these the abdomen is attached to the thorax by its whole width, as in all the other divisions of the Hymenoptera, and both larvæ and imago feed solely on vegetable matter; the latter sometimes do not appear to eat at all. These insects, named the Phytophaga, are separated into two families, which we may call in English the leaf eaters and the wood eaters. From the prominent genera Linnæus called them the Tenthrinidæ and the Siricidæ. We also know the insects in the first family by the name of sawflies, the ovipositor being constructed on the principle of a saw. The lip in the sawflies is three-cleft, while in the wood-eaters or borers it is simple. In some species the antennæ are long and threadlike, in others these useful organs are reduced to a few joints. A female sawfly when she is at work with her implement upon a leaf or a twig in turn uses the two blades of which it is composed, and by their action a jagged wound is caused, in which an egg or eggs are deposited. Some suppose that besides this process a poisoning effect is produced by a liquid that is thrown in, for frequently there is a subsequent enlargement of the injured part, and the excrescences to be seen on some Willows are familiar examples of the doings of Tenthrinidæ. It is certain at least that the eggs absorb nutriment from the plant or tree, and increase in size before the hatching.

There are nearly three hundred British species in this family, amongst them a number of deadly enemies to the horticulturist, and their attacks upon his choice plants are often made very insidiously. *Nematus Grossulariæ*, the Gooseberry sawfly, strips the bushes of all the soft parts of the leaves, the midribs remaining as a bare memento of what has been. The greyish black larvæ have many legs, resembling the larvæ of a moth, but it is their habit to twist themselves round in a peculiar way while they are feeding. The Rose sawfly (*Hylotoma Roseæ*) is not so common as are some of these flies, fortunately for our rosarians, though it is always well to be on the look-out for shoots that have a tumid aspect, since they may have had a visit from one of these pests. From the manner in which the plant grows it is not easy to detect the early inroads of the Turnip sawfly (*Athalia spinarum*) which has in its larval stage received the name of the nigger or the black canker. Professor Westwood has recorded instances in which many hundreds of acres covered with Turnips had to be ploughed up because the crop was irrecoverably ruined. Lime, soot, and more potent

applications seem futile, and mechanical contrivances for crushing the niggers have not answered. In kitchen gardens hand-picking is the only plan, but it has to be done cautiously, as they drop to the ground on any alarm. The fly is conspicuous in its black and yellow attire, and in this species, as in others, some may be killed on the wing ere they commence their attacks on the plant they favour. It is only a few years since we have learned how troublesome the sawflies of the genus *Selandria* can be. The larvæ artfully lie quite still in the leaves during the day, and as they coat themselves with a slimy substance they exude they have not the appearance of living insects. *Selandria Cerasi* occurs upon the Cherry, Pear, and Plum; where these are numerous they injure the tree by their secretion as well as by their devouring propensities. Birds are said to avoid the larvæ of these slime-exuding species.

The small family of the *Siricidae* are like the preceding in their perfect form, though they have, instead of a saw, an ovipositor that may be compared to an angur, serving to penetrate solid, or even dry wood. In the larval state they live concealed. In one or two species the grubs are actually eyeless, their mode of life enabling them to subsist by the sense of feeling. One of the singularities noticeable amongst these flies is the great difference of size occurring sometimes in the individuals of one species, where some may have twice or thrice the proportions of their brethren, whereas in other groups, amongst the bees for instance, a hundred specimens taken at random will prove to be precisely alike. The Giant *Sirex*, *S. gigas*, also denominated the horn-tailed fly, is a good example of the family, a local species, however, because it is to be found chiefly in the neighbourhood of Fir trees. Abroad, in the countries where Firs are extensively grown for export, the insects during some seasons positively swarm, yet it is still matter for speculation whether the flies ever pierce wood that is quite healthy, though we do know that they attack growing trees. The formidable aspect of the insect's tail, together with its loud cry, makes timid persons alarmed at its approach, though it is perfectly harmless to humanity. Stories are told of the emergence of these flies in parties from boards that had been laid down in apartments, while they contained the pupæ of a *Sirex*, much to the surprise of the occupants of the house. There are also accounts well authenticated of the larvæ having pierced channels through lead. Mr. Wood remarks that summer-houses or garden alcoves sometimes come to decay through the interference of *S. gigas*, but then he considers the fault lies with the carpenter who has used bad wood.—J. R. S. C.

NOTES ON VILLA AND SUBURBAN GARDENING.

KITCHEN GARDEN.

ONIONS.—The first favourable opportunity of sowing seeds of this vegetable should be taken. Choose a good open position, heavily manured and deeply dug. Do not attempt to sow if the ground is at all wet, as a firm soil is requisite if well formed and solid Onions are wished for, and the trampling necessary is very detrimental unless the soil is tolerably dry. Previous to sowing, a dressing of either soot or wood ashes, or some of both, and also a slight sprinkling of salt may with advantage be stirred, but not turned in, with a fork. Sow the seed thinly in shallow drills 10 or 12 inches apart, these distances favouring the use of a hoe, which is very beneficial if often used. Cottagers frequently obtain heavy and even crops by sowing in drills 6 inches apart, all cleaning and stirring being done with a small short-handled hoe, and the plants are so thinned as to present the appearance of being sown broadcast.

PARSNIPS.—These, too, ought now to be sown. Deeply dug or trenched ground suits them, especially if manured for the previous crop. Lime is a good manure for them. Any solid manure that may be used should be dug in deeply, or otherwise it will cause many of the roots to be forked. Sow in drills 12 to 18 inches apart according to the poorness or richness of the land.

PEAS.—Another sowing of early and second early varieties should be made by the time the seeds first sown have germinated. Of the dwarf varieties sow William I.; and Alpha, Advancer, or Supreme may be sown as previously advised. Of taller varieties, Telephone, Telegraph, and Huntingdonian are excellent, the two former being the earliest. Four or even five feet between the rows is not too great a distance for these varieties; and a row of Cauliflowers or Lettuces may be planted, or Spinach sown between. More of the Early Longpod and some of the Green Windsor or other late varieties of Broad Beans may also be sown.

A Spring Bed.—This is a local term for a hotbed for raising early vegetables and plants. They are prepared similarly to the Carrot beds as directed on page 188, and their use is to raise early plants of Celery, Brussels Sprouts, Cauliflowers, and Lettuces. These are sown very thinly in patches, Radishes in the divisions,

and Horn Carrots throughout the bed. Towards the end of April a few Vegetable Marrow seeds are dibbled in, and the plants that follow eventually take possession of the bed, as the four first-named are pricked off when large enough, and the Carrots and Radishes are drawn when fit for use. Birds are kept off with fish nets, and the beds protected during nights with mats only. It is absolutely necessary to sow each sort thinly.

HOTBEDS FOR PROPAGATING BEDDING PLANTS.—Innumerable owners of small gardens have lost part of, or the whole of, their stock of Pelargoniums and other bedding plants, and consequently in the majority of cases will have to depend principally on plants raised from seeds. This is not so deplorable as it may seem, as probably it may lead to the employment of more hardy if less gay plants, and also to a more general recognition of the value and beauty of many annuals. For the raising of the latter, and of cuttings of such plants as may be saved, a well-prepared hotbed and a box frame will be found of good service. Failing a frame square boxes of any description may be utilised, a suitable depth being from 6 to 9 inches. Old packing cases and other boxes are often to be bought cheaply, and these may be either broken up and remade or sawn through, and bottoms placed to those sections requiring them. Bore holes in the bottoms to permit egress of water, place a good layer of crocks in the bottom, and a layer of rough soil or half-decayed manure over these. Suitable soil consists of equal parts of sifted loam and leaf soil, with a good addition of sand. Failing these substitute the best light soil at hand, and add plenty of sand or road grit. For cuttings fill the boxes to within 8 inches of the top, making the surface firm and even; on this place a layer of sand, and insert cuttings of such plants as *Petunias*, *Lobelias*, *Ageratums*, *Fuchsias*, *Heliotropes*, *Verbenas*, *Abutilons*, and *Veronicas*, which are best cleanly cut below a joint, and the lower pair of leaves taken off. Do not insert them too deeply, see that they touch the bottom of the hole made by the dibber, and fix them rather firmly. Give tepid water through a rose, and cover with a square or squares of glass, which can be cheaply bought of any size. Shade from bright sunshine, and keep them close till struck, taking care, however, to wipe the glass dry every morning; and in some instances, if much steam abound, it will be necessary to slightly raise the glass till the cuttings are dry to prevent damping off. Cover during the nights with mats or other material.

The seed boxes may be filled in the same way, but a layer of sand is not required for coarse seeds. It is a good plan to water the soil a few hours previous to sowing, and then to press the seeds into it and cover lightly (in the case of *Lobelia*, *Petunia*, and other fine seeds very lightly) with light sandy soil. If a frame is used the cuttings or seeds will not require to be covered with glass, but many of the latter germinate more readily when covered. Keep the soil uniformly moist, small seeds especially being quickly ruined if allowed to become too dry. Pots and pans may be substituted for boxes for framework, be filled more fully, and the former especially should be well drained, say about half full of potsherds. The lights of the frames must be left slightly open if the beds are inclined to steam. Seeds of the following should be sown at once:—*Eucalyptus*, *Chamsepeuce*, *Wigandia*, *Solanum*, *Cineraria*, *Acacia lophantha*, *Pyrethrum*, *Petunia*, *Lobelia*, *Verbena*, and *Ageratum*. Seeds of *Asters*, *Stocks*, *Zinnias*, *Marigolds*, and many other flowering and foliaged plants should not yet be sown, as they germinate and grow quickly, and if sown early are apt to experience a check from which they really do not recover. *Cineraria maritima*, *Ageratum*, *Lobelia*, *Petunia*, and *Pyrethrum* will germinate if placed in a warm position in a greenhouse and covered with glass.

GREENHOUSE AND FRAMES.

Zonal Pelargoniums.—Those wintered thickly in pots or pans, and which are to be potted off, should have their points taken out a few days previously to the operation, in order to make them more bushy. Where the stock is short and a little heat is available the tops of strong autumn-struck plants and of any old plants may be struck, and if grown on will make good plants. Well drain the pots, and employ a fine and gritty soil, and place the pots on a warm shelf near the glass. Those without heat had better delay cutting down their plants for a time.

Calceolarias.—Pinch out the points of the autumn-struck bedding varieties. They do not strike readily in the spring. Herbaceous or large-flowering varieties should not be allowed to become root-bound prior to being finally potted. Suitable sizes in which to flower them are 6 or 8-inch pots, and the soil employed should consist of three parts turfy loam, one of decayed manure or leaf soil and sand. Stand them on a cool bottom, and keep close till established.

WORK FOR THE WEEK.

HARDY FRUIT GARDEN.

THE flowers of Apricot trees are expanding rapidly, and will if the present sunny weather continue be fully open in a few days; care must therefore be exercised in protecting the trees at night. Peach and Nectarine buds are swelling rapidly, and tying or nailing-in should be completed at once. The wood is very unripe generally, and in some cases the points of the young shoots

have been killed by the severe frosts of December last, fruit buds not being at all plentiful. All the injured shoots should be cut back to ripened wood at the base of the shoots, and those showing fruit blossom should be cut back to a triple bud. Shoots devoid of flower buds may be cut back to within one eye of the base, but extensions need only have their immature points shortened; and as this will give rise to a number of growths all should be stopped at the second or third leaf, except such as are required to be trained-in to form the bearing shoots of next season. The shoots stopped will form short stubby spurs, which will ripen well even under adverse circumstances and set the fruit freely. This practice, however, it is not desirable to apply to the annual bearing wood, as it crowds the trees with too much foliage. Except, therefore, in the case of trees not yet of full size, and for the shoots destined to become main branches, the spurring-in of the shoots that would otherwise be removed by disbudding is not commendable, as though the fruit sets freely it does not become so large as that borne on stronger growths. The pruning and nailing-in of such fruit trees on north walls as the Morello Cherry, Gooseberry, or Currant bushes should be attended to without delay. The shoots of the Morello Cherries should be thinned out where they are long and bare or too crowded, training-in young growths. Apple and Pear trees, standard or otherwise, of full age and size that fail to bear profitable crops of fruit should be headed down and regrafted with other varieties that have been found to succeed in the locality. Many varieties of Apple and Pear are only really profitable in certain soils and localities, and where experience has proved them otherwise it is useless to continue growing them. Standard fruit trees recently planted should be securely staked, and the soil over their roots well mulched with stable manure. If exposed to attacks from hares and rabbits protect the stems by placing wire netting a yard high around them, leaving sufficient space for the swelling of the stems. Figs which have been covered up during the winter should be uncovered on a mild day. Defer pruning until the fruit is visible, so that the least fruitful shoots may be cut out. Excessive pruning should be avoided, only the stronger or unripe shoots being removed, which should be done as much as practicable in summer so as to give the fruit the advantage of light and air. Strawberries should be cleared of decayed leaves, be cleaned of weeds, and have the autumn mulching lightly pointed in between the rows and plants, but avoid disturbing the roots.

FRUIT HOUSES.

Vines.—The comparative scarceness of late Grapes of high quality this season, due mainly to the preceding cold sunless summer, indicates that late varieties should have a longer growing period to insure the thorough ripening of the fruit; hence we strongly advise starting late Vines with as little delay as possible. The inside borders should be made thoroughly moist by watering with tepid water, syringing the rods several times a day, and damping every part of the house every evening, maintaining a temperature of 55° artificially, advancing to 65° with sun heat. Disbudding, tying down, and stopping will be necessary in the succession houses, commencing to disbud when the most promising breaks are distinguishable, being careful in tying out the shoots, as when growing vigorously they are liable to snap, and in stopping leave two or more joints beyond the fruit if space admit. Remove ill-formed surplus bunches from free-setting varieties as soon as the most promising can be decided upon. Bunches running into tendrils is a sure indication of imperfectly matured wood, and can only be satisfactorily grappled with by lifting the Vines before the leaves have fallen; but the evil may be lessened by reducing the moisture and increasing the heat for a short time. Vines well furnished with foliage and bearing swelling Grapes can hardly have the inside borders supplied with too much water, and Vines at all weakly or carrying heavy crops should have some weak liquid manure, keeping the atmosphere moist by sprinkling available surfaces frequently, especially in the afternoon. Ventilate carefully—a little at a time, to avoid sudden changes, closing the house early with 80° to 85° of sun heat, and allow a gradual fall through the night to 65° in the morning, or 5° less in frosty weather. Grapes that have passed stoning should be encouraged by liberally supplying tepid liquid manure to inside borders, avoiding the close-stopping system, which only increases the liability to shanking. Keep a sharp look-out for red spider, and by maintaining the atmospheric moisture with ammonia seek to ward off its attacks, and upon its first appearance coat the return pipes with flowers of sulphur. Vines in pots must be well supplied with water, and if the roots have extended to the fermenting materials there must not be any deficiency of water there any more than in the pots. Where the Grapes are colouring, as will be the case with those started early in November, a comparatively dry atmosphere should be maintained and air regularly given, a free circulation of warm air being essential to good colour and finish.

Cucumbers.—The recent cold winds will have rendered it necessary to apply good linings to dung-heated beds which have been made up a few weeks. As much of the outside of the beds as can well be spared should be removed; and if the heat has not declined too much, only one side or half the bed need be lined now, deferring the other half till the heat is again found to be on

the decline. In any case the lining should be at least 2 feet in width, thin linings being comparatively useless. When the bed becomes re-heated be careful, especially when the sun shines brightly, to allow the escape of the steam. Good night coverings will be necessary to maintain the temperature at about 70° at night, commencing to ventilate a little at 75°, allowing an advance from sun heat to 80° or 85°, closing in the early part of the afternoon, but not so early as to raise the temperature over 85° or 90°. The growths will require training and pegging down at the joints as they advance, and do not overcrowd, not stopping until the shoots have advanced to within 1 foot of the sides of the frame or pit. Add a little more soil as the roots appear at the sides of the hillocks, and in watering do not wet the foliage more than can be helped. In houses the night temperature may be maintained at 70°, allowing an advance by day to 85° or 90° with sun heat. Renovate old beds by removing as much of the old exhausted soil as can be done without much injury to the roots, replacing with rich lumpy compost that has been previously warmed. The plants must have all surplus shoots removed once every week. With the increased light and heat employ a little more atmospheric moisture, and watering at the roots will need to be more liberal and frequent. Make further sowings as occasion requires, preparing more fermenting material for frames or pits as they become cleared of Potatoes, &c.

Melons.—The earliest plants will be growing fast, and should not be stopped until they have well advanced. Fruit in most varieties will appear at the second or third joints on the first laterals, and to secure a good set a dry atmosphere is essential, with no more water at the roots than to prevent flagging, which will arrest undue vigour and produce plenty of pollen. Fertilise the female blossoms as they expand from day to day, and stop one joint beyond the fruit. If a succession of fruit be required from the same house only some of the plants should be so treated, but should be divested of both the male and female flowers, and have the laterals stopped once or twice to keep them a little later, stopping in the first instance at the third joint of the laterals. Do not earth up the roots until the fruits begin to swell off. In pits and frames if the fermenting materials have produced a good heat the plants should be planted out at once, pressing the soil firmly about the balls, and if the soil be damp water must be sparingly given for a few weeks. Employ good night covering, and otherwise treat as advised for Cucumbers in frames.

FLOWER GARDEN.

Lawns.—The grass will soon require mowing with the machine. In the meantime use the roller freely, removing Daisies, Plantains, &c. Any bare or mossy portions of the lawn should be raked over, covered with finely sifted rich soil, and sown with grass seeds. If the grass on the lawn generally does not grow satisfactorily apply a dressing of soot, wood ashes, and lime in equal proportions, at the rate of one peck per rod. Where large breadths of lawn have to be formed, and there is difficulty in procuring turf of a suitable character, grass seeds should be sown. The ground should be made perfectly even and firm, and if the soil be poor it will be an advantage to dress with short manure or thoroughly reduced vegetable refuse. The margins of the walks or beds should be laid with turf about a foot wide, and with favourable weather early in next month the seed may be sown, choosing a still day for the operation so as to ensure its equal distribution, raking over lightly and rolling down well.

It is best to avoid transplanting deciduous trees and shrubs late in the season, but it may be necessary to still do so to complete alterations in hand. It is important in such cases to prevent the roots from becoming dried by exposure, as the bark at this season soon becomes contracted, and the plants do not recover for a long time. If the soil be dry a good watering may be given when the roots are only partially covered with soil. This watering is more especially advisable with such trees as have large roots, or in the case of evergreens; and if a mulch be given the necessity for after-watering will be considerably reduced. The pruning of evergreen shrubs may now be proceeded with—a system too little practised, but none better repays the labour bestowed. Roots of Briars, Manetti, and other Rose stocks may be grafted, selecting strong pieces of root or young plants, which should be shortened back so as to leave only an inch or so of stem, to which attach the graft, tying tightly, and plunge in a close frame or propagating box in a temperature of 70° to 75°, keeping dark and close until they begin to grow, when light and air should be gradually admitted.

PLANT HOUSES.

Orchids.—Shake out plants of *Calanthe vestita* from the old soil and cut away the dead roots. Repot the pseudobulbs in a compost of three parts peat, one part turfy loam, and one part old cow dung, with a little sand. Place 2 or 3 inches of drainage in the pots according to their size, covering with a layer of sphagnum, filling up to within an inch of the rim with the compost indicated, and on this place the bulbs, working in about half an inch of soil between them. When they have commenced growing water freely, indeed the soil must never be allowed to become dry until the growth is completed. *Calanthe Veitchii* is one of the finest of winter-flowering Orchids, its beautiful rose-coloured flowers borne

on stately stems forming a striking contrast to the drooping Calanthe. It requires the same treatment as *C. vestita*. *Limnates rosea* has been somewhat neglected of late for the stronger-growing Calanthe Veitchii, but it has a softer pink colour and is more compact in habit. It requires the same treatment as Calanthe vestita, being placed in the East India house in a light position.

TRADE CATALOGUES RECEIVED.

A. M. C. Jongkindt Coninck, Tottenham Nurseries, Dedemsvaart, near Zwolle, Netherlands.—*Trade List of Hardy Perennials and Rock Plants.*

James Yates, Royal Oak Mills, Stockport.—*Catalogue of Farm Seeds.*

Samuelson & Co., Banbury.—*Price List of Mowing Machines.*
Cranston & Co., King's Acre, Hereford.—*List of New Roses.*
Ellwanger & Barry, Mount Hope Nurseries, Rochester, New York.—*Illustrated Catalogues of Fruit Trees and Strawberries.*

TO CORRESPONDENTS.

* * All correspondence should be directed either to "The Editors" or to "The Publisher." Letters addressed to Mr. Johnson or Dr. Hogg often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense. Correspondents should not mix up on the same sheet questions relating to Gardening and those on Poultry and Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

CARNATION GRASS (R. B.).—*Carex glauca* and other Sedges are so called because their leaves have some resemblance to those of the Carnation, *Dianthus caryophyllus*.

FUNGUS ON CUCUMBER BED (A Reader).—Sprinkle the surface with freshly slaked lime and sulphur, and stir the soil frequently, and we think the fungus will disappear.

HARRISON'S MUSK (A. L. A.).—We do not think you can obtain seed of this variety, but plants can now be purchased cheaply, and they increase rapidly. It is valuable both for greenhouse, room, and garden decorative purposes, and is hardy.

OATS AND WHEAT (W. A. Farmer).—*Avena sativa*, the cultivated Oat, is supposed to have been originally obtained from Asia, but is not found growing in a wild state. The origin and native country of Wheat, *Triticum sativum*, are unknown.

PHYLLOXERA VASTATRIX (F. M. Guernsey).—If you send *S&D* in stamps to the publisher and ask him to send you No. 433 of the *Journal of Horticulture* you will find "what the pest is like," and much information relative to it.

GILBERT'S PRIMULAS (Florist).—Your failure to find the names of Marchioness of Exeter, Princess, Mrs. A. F. Barron, and White Lady in the list of plants certificated last year is not surprising, as those varieties were certificated in 1877, the Earl of Beaconsfield only in 1879. They are all good and highly worthy of culture.

CAK FOR PARAFFIN (H. B.).—If the cask is sound and strong, and has not been exposed to cause shrinkage, we do not think the oil will escape, but on this point no one can speak accurately without seeing the cask. Cannot you gain the advice of someone having experience of casks in your neighbourhood?

LICHENS ON LAWN (H. T.).—The lawn probably requires draining, the presence of the lichens being indicative of waterlogged soil. You cannot apply salt in sufficient quantity to kill them without injuring the grass at the same time. You might try a heavy dressing of lime, soot, and wood ashes; and if this fails you must dig them up, drain the site, enrich the soil, and sow lawn seeds or lay down fresh turf.

ROSES (F. Boyes).—By your request your questions were submitted to "D. Deal," who states in reply that William Warden (not James) may be heard of from Mitchell & Sons, Pittdown Nursery, Uckfield; and Beauty of Westerham from Mr. J. Cattell, Westerham, Kent. There has been such a great demand for A. K. Williams that it is almost impossible to get it at the present time.

A BOX OF FLOWERS (H. Cannell).—Violet odoratissima is good and very fragrant; the laced Polyanthus rich in colour, and the lacing well defined; the border Polyanthus, deep lilac, very pretty; and the Fuchsia Jean Sisley bright and novel. The corolla, which is quite expanded, exactly resembles the pip of a well-formed scarlet Zonal Pelargonium, even to the crimson venation of the petals. It is a remarkable flower.

ABNORMAL RICHARDIA (B. C. D.).—Flowers with double spathe such as the one you have sent are occasionally produced by vigorously grown plants, but are not common. In this flower the second spathe grows quite out of the spadix, not below it in the usual manner. The Cineraria flowers represent a very good strain, the blooms being large and most of them of good form, while the colours of the selfs are extremely rich, and of the others clear and well defined. Such fine flowers and bright colours are indicative of good culture.

SOIL FOR FERNS (De Bosco).—We presume you wish to form a rockery. In this case first provide a mound of soil, and bed the rough stones, &c., in it—not placing the stones first and the soil amongst them afterwards, which would end in failure. A suitable compost for Ferns is a mixture of light loam, leaf soil, or old decayed vegetable soil, and peat in equal proportions, adding sand if the loam is not of a sandy nature. For the position you name only strong or free-growing Ferns will be suitable, as the drip will injure if not destroy those having small delicate fronds.

NEW GREENHOUSE (J. L. Apr.).—The arrangement of the staging is good for displaying plants to advantage, but not for growing large symmetrical specimens. We do not approve of your proposed mode of heating, as we consider a stove placed in the centre would spoil the appearance of the structure and much impair its usefulness. A boiler placed outside the house and piping taken round the staging would be far preferable. We doubt, too, if the ventilation is sufficient, and we should certainly have large ventilators at both ends of the house just under the ridge board.

APPLYING INSECTICIDES (O. G. R.).—The infusion of quassia chips used at the proper strength for destroying green fly will not be injurious to Roses on walls by a little of the solution draining into the soil. When plants in pots are syringed with an insecticide it is always advisable to hold the plants in a slanting position or lay them on their sides on a mat, so that the solution reaches the under surfaces of the leaves, where the insects are generally the most numerous. The syringing is then more effectual, and the solution does not drain into the pots. Dipping the plants, especially if much infested with insects, is better than syringing them. Your other question shall have attention next week.

RIPPLEVILLE'S PROPAGATING FRAME (Gardener).—There is no smell of paraffin whatever in the frame, and the bottom heat is moist; the plugging material, cocoon-nut fibre refuse, being placed on slates over a tray containing water which is kept at the temperature required by regulating the burner of the lamp, which is placed outside the frame. With proper management—and that is quite easy—the frame is well adapted for raising Cucumber plants and striking such cuttings that need a close, moist, warm temperature. Placed in a greenhouse or other glass structure it will prove very useful for propagating purposes. It is not suitable for placing in the open air for propagating during the early spring months, but might be usefully employed outdoors in summer for raising plants both from seed and cuttings.

AMMONIACAL VAPOUR IN VINERIES (N. O. Y. P.).—Sweet fermenting material, such as stable manure and leaves, is beneficial when placed in vinerias, as when turned frequently the moisture evolved is conducive to the swelling of the buds and the free growth of the foliage, but if used in a strong rank state it is dangerous. When prepared by being frequently turned over in the open air before being brought into the vinery the smell is slightly pungent, but by no means unpleasant; if decidedly offensive the material is not in a fit state for use in the houses. After the foliage is developed and the Grapes are thinned a solution of guano placed in the evaporating troughs aids in invigorating the Vines and preventing the increase of insects. The employment of sweet fermenting material and liquid manure in vinerias have been frequently recommended in "Work for the Week."

VINES FOR GREENHOUSE (J. P. A.).—You cannot have a better variety than the Black Hamburgh. If you wish to have white Grapes as well plant one Vine of Foster's Seedling. Pelargoniums will not grow satisfactorily under Vines; and if you must grow these plants we cannot advise you to have more than three Vines, one in the centre and the others about 2 feet from the ends of the house. The Vines may be planted now; spread the roots out straight, and cover them about 4 inches deep with fresh and rather light loam and an inch or two of manure to prevent the soil drying excessively. If the canes are long rub off the buds as they commence growing down to the base of the rafters (to shorten the canes now might induce bleeding), and take up one growth from each cane. If this becomes strong and is well matured in the autumn it may be shortened to within 3 feet of the base of the rafter, and each Vine may carry about two bunches next year. When purchasing the Vines ask for strong fruiting canes in pots, and you will be supplied with Vines of the proper age for planting.

STRIKING TRICOLOR PELARGONIUMS (Subscriber).—Stout healthy cuttings of all the variegated Pelargoniums strike freely in heat at this season of the year, and often make better plants than those struck in the autumn. The best plan in your case will be the cutting singly each in the centre of a thumb pot filled with sandy soil. The soil should be just sufficiently moist when used that it can be pressed round the base of the cuttings to render them firm. In inserting them employ a blunt dibber, so that the end of the cutting rests on a firm base, and do not press the soil firmly round the cutting at the surface of the pot. Inserting cuttings with a sharp-pointed dibber and pressing the soil closely round them at the "neck," leaving it loose below, is a fertile source of damping. After inserting the cuttings give them a good watering with tepid water through the rose of a pot sufficient to penetrate every particle of soil, then place the pots on a shelf in the stove. An occasional light sprinkling with the syringe on the morning of a prospectively bright day will keep the foliage fresh, and water must be applied to the pots as the soil becomes dry. As soon as the roots are seen protruding through the drainage of the pots remove the plants to a cooler position, and about a week afterwards shift them into 4-inch pots.

RAISING ROCK PLANTS FROM SEED (Lizzie).—Seed of all the plants you name may be sown now in pans or boxes and placed in a cool frame; or if you do not possess a frame square of glass may be placed over the boxes, an inch or two of space being provided between the soil and the glass, the boxes being placed in a sheltered position outdoors. A mixture of loam and leaf soil will form a suitable compost, the seed being covered about its own thickness with finely sifted soil. Water the soil thoroughly before the seed is sown, and shade the boxes afterwards to prevent the surface drying, for the soil must be kept regularly moist to insure germination. As soon as the seedlings can be handled prick them out an inch or two apart in other boxes, and when the plants touch each other plant them about 6 inches apart in a prepared nursery bed in the open garden. Water them as required, stir the soil between the plants occasionally, and permit no weeds to grow amongst them. Early in the autumn they may be transferred to the rockery, and most of them, if they have been well cultivated, flower the following year. As you do not state the number of Ferns you require we are unable to give a list of names. In our "Greenhouse Manual" you will find lists of Ferns and instructions on their culture with much other information that will probably be useful to you. It can be had from the publisher in return for ten penny postage stamps.

CROPPING A GARDEN (E. F. B.).—As you do not state the nature of the soil nor the number of climbers or fruit trees you require on the house walls, we can only reply to your letter in general terms. All kinds of hardy fruit trees would thrive in your garden either in the open or trained against walls. If the soil is not light Strawberries would succeed with the surface of the ground covered with manure, this being necessary as the soil is shallow. Early Potatoes would succeed with less trouble than any other vegetable. Cabbages, Brussels Sprouts, Broccoli, and Onions would be likely to answer fairly well with a comparatively little expenditure of labour, so would Lettuces and Radishes early in the season, but not during the hot

summer months; the same remark applies to Cauliflowers. No climbers for walls involves so little care as *Ampelopsis Vetchii* and ornamental Ivies, as they require no nailing or pruning. Clematises are easily grown and not attacked by insects as Roses are when trained to walls. No flowers for the borders are raised so cheaply as annuals. Besides Mignonette, Nemophilas, Clarkias, Godetias, Saponarias, and other hardy annuals you might grow Stocks, Asters, Phlox Drummondii, and Helichrysas. Bulbs require the least care of all flowers, such as Snowdrops, Crocuses, Tulips, Hyacinths, Narcissuses, Gladioli, and Lilliums; and such hardy flowers as Polyanthuses, Alpine Auriculas, Arabises, Aubrietias, Iberises, Pinks, Carnations, Antirrhinums, Pyrethrums, Aquilegias, Campanulas, Irises, and many others are quickly raised and easily managed.

BIRCH TREE BLEEDING (*F. M. S.*).—As you cannot dry the wound you will find it very difficult to prevent the exudation of sap; it will, however, in all probability cease flowering when the leaves expand, and little if any injury will result to the tree. We can only suggest that you try the following grafting wax:—Yellow wax, 1 lb.; turpentine, 1 lb.; Burgundy pitch, 8 ozs.; mutton suet, 4 ozs. Melt all together and mix thoroughly, and leave them to cool, then rub it well into the wound. Liquid grafting wax is also a very useful application, and is, perhaps, the most convenient for the purpose of all the mastics used for covering wounds and grafting. It is of the consistency of varnish, and is applied very thinly with a brush. Care must be taken not to lay it on thickly, for the surface hardens so rapidly the alcohol is prevented from evaporating. Resin, 1 lb.; beef tallow, 1 oz.; spirits of turpentine, 1 tablespoonful; alcohol (95 per cent.) 6 ozs. Melt the resin over a slow fire; when melted take it off and add the beef tallow, stirring it constantly; let it cool down somewhat, mix the spirits of turpentine little by little with it, and at last the alcohol in the same way. Should the alcohol be added while the mass is too hot, much will be lost by rapid evaporation; if, on the contrary, it is too cool, it will form a viscid lump, and must be slightly heated again. Stirring briskly is indispensable to mix the ingredients thoroughly. In well-corked bottles it keeps for years. If in course of time it becomes too thick, the addition of some alcohol will make it liquid again. For this purpose it must always be warmed. It is a good plan to put the bottle containing it in boiling or hot water to accomplish this.

NAMES OF PLANTS (*A Constant Reader*).—1, *Agave americana variegata*; 2, *Bolanum Capelastrium*; 3, *Jasminum nudiflorum*. We cannot account for the flower stems of the Hyacinths withering; but the same circumstance sometimes occurs if the bulbs are potted late and have made some growth before the formation of roots to support it. (*E. H. W.*).—*Polygala Dalmaniana*. (*T. G.*).—*Clematis indivisa*. (*Mrs. S. Godley*).—The specimen was insufficient for identification. (*M. D.*).—*Aloe echinata*; keep the old plant dry and it may recover, also take off some of the young shoots and insert them in sandy soil. (*A. Novic*).—8, *Sedum azoldeum*; 6, resembles *Ophiopogon intermedius*. The other specimens were completely withered. (*A. H. S.*).—*Dendrobium heterocarpum*; syn., *D. aureum*. (*Cranfordian*).—1, *Asplenium marianum*; 2, *Pteris cretica albo-lineata*; 3, *Adiantum assimile*. (*Somer*).—Too much injured in transit to be recognisable. If specimens are not firmly packed they seldom arrive in good condition.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

STEAM CULTURE.

(Continued from page 187.)

HAVING previously alluded to the necessity of providing water for the working of steam power, we will now refer to the economy and convenience of obtaining it as near as possible to the points where it will be required. On the hill farms, which are the farthest removed from rivers and brooks, it is desirable to form ponds at the sides of the roads and highways, at the same time looking to the position where the water is likely to be required for use, and they should be within the boundaries of the farm, and thus be made private property. Upon the mixed soils there will usually be found a supply of water near at hand, to be obtained either from rivers or brooks. In some instances, however, it may not be so, but generally upon such soils there is more or less of draining or springs rising in the ditches. In either case the water should be available and utilised by making tanks or ponds at the outfalls of drains and springs, at the same time looking carefully to the position which is likely to be taken by the engines whilst in use upon the farm, and especially when the roundabout tackle is used. The tanks or ponds may be so placed as to furnish water to the engine by the hose without carting or any horse labour at all.

It being of the utmost importance to the home farmer to be made acquainted with the different methods of tilling the different soils, and the implements used for the purpose, we shall introduce to his notice those special modes of culture as carried out by the most experienced and practical farmers. We will first notice the system pursued by Mr. W. Smith, a practical farmer of Woolston in Buckinghamshire, who, by the use of implements of his own invention and the adoption of a method of culture peculiarly his own, has for the past twenty-five years proved the advantages which he claims, and to which he is justly entitled

as the originator, because his was the first farm in the kingdom wholly under steam culture. The farm contains 112 acres of arable land, partly composed of gravelly clay, but chiefly a strong, cold, calcareous clay. He abolished the old system of bare fallows. The land is, and has been for many years, as clean as a garden, and produces splendid crops of roots, wheat, barley, beans, and clover, and each of excellent quality. He applies but very moderate quantities of either artificial or yard manures, the productiveness of the land being maintained to a great extent by the mechanical treatment which it receives under his system of steam culture, which both breaks up, and continually subdivides and prepares, the inexhaustible resources of mineral nutriment for vegetation existing in the soil, and also at the same time renders available new stores of organic constituents derived from the atmosphere. Mr. Smith denounces the plough as a planter of root weeds, and uses it only for the ploughing of lea ground, whereby the furrows are turned over and the clover roots tucked under in readiness for sowing with wheat. For a number of years he has relied principally upon the effect of deep tillage afforded by the tires of his steam cultivator, and by the action of the ridge or double mould board plough and subsoiler. By one process in autumn, after the dressing of yard manure has been applied on a wheat stubble he prepares it for sowing with mangold seed the following spring by using the steam trencher—that is, a ridge plough with tires, which breaks up the ground in advance, and throws the land into ridges 27 inches apart, covering up the manure at the same time; the intervals between the ridges are then broken by the subsoiler. Nothing further in tillage is required but to drill or dibble the mangold seed upon the finely powdered and weather-beaten surface of the ridges. Bean stubbles are smashed up by the cultivator and harrowed and drilled with wheat, and a combined cultivator and drill cross cultivates and drills the beans, or breaks up and drills barley on the land after root crops. There is immense economy in this steam tillage compared with horse labour, or indeed with much of the steam ploughing and ordinary cultivation, in consequence of the depth and porosity given to the staple of the soil, and the developed fertility exhibited by the continuous heavy crops of good quality. The increase of corn under this system is said to be in most instances 8 bushels per acre. The farms of Messrs. Howard of Bedford afford another capital example of improvement by steam culture on the boulder clay. By the power of their Farmer's engine they can cultivate, plough, ridge plough, subsoil, drag, harrow, and drill; and the stationary engine can cultivate successfully 10, 20, 30, and up to 55 acres at one "setting down," and the drainage has been designed so that it supplies a tank or open pond at every point where the engine is used during the tillage of the whole estate, these tanks retaining water at all seasons, and letting only the overflow pass away by the main drains, purposely laid. The cultivation and smashing-up before winter is so much like the plan adopted by Mr. W. Smith that it is not necessary now to point it out.

Steam power has now been so successfully applied to the reclamation of moorlands and woodlands that in the latter case the timber is cut by steam power, hauled away and sawn by steam power, and the stools or roots of trees torn up and effectually lifted out of the soil by the same means. Again, upon the moorlands and mountain sides the land is broken by the steam cultivators of various designs, some of which upon being impeded by rocks or blocks of stone are effectually stopped backed, and give room and opportunity for manual labour, likewise assisted by steam power for their removal. All this has been most ingeniously and perseveringly carried out upon the Duke of Sutherland's estates in Scotland, under the able management of Mr. G. Greig; the steam power, consisting of different implements, were chiefly invented and supplied by J. Fowler & Co. of Leeds; the fuel used being chiefly dried peat dug upon the moorlands, to be reclaimed and brought into cultivation. This work of reclamation by steam power forcibly reminds us that in its absence nothing of the kind could have ever been effected to any extent or advantage in such

a locality. Some remarkable improvements upon poor clay pasture land have been effected in Wiltshire by the working of Fowler's steam draining implement, called "mole draining." In the case to which we allude the mole was drawn through the soil at 3 feet deep, and at every 2 yards apart, with cross drains at intervals of 4 chains; but no pipes were laid except at the outlets, and this work upon such strong clay proved to have effected a wonderful improvement. This work has sometimes, however, been done by the pipes being strung on to a wire rope following the mole, but leaving the 1-inch pipes behind in the land. When laid with pipes in this way the work would last many years, but otherwise would be liable to be injured by moles, rats, rabbits, &c. Upon some very strong soils deeply drained a great change in texture has been effected by a novel operation called "knifing"—that is, by cutting gashes some 3 feet deep in parallel lines some yards apart, and thus opening and shaking the subsoil, and letting down more freely air and water. The powerful implement employed is Messrs. Fowler & Co.'s knifer, fitted with an immensely strong blade or coulter, and is hauled at slow pace by wire rope, pulley, and steam engine stationed ahead. We have introduced the above to the notice of the home farmer for the purpose of showing him how many and various are the means adopted for the improvement by steam power of both pasture and arable land when it consists of strong clay.

Some comparison between the power of steam and that of horse labour, as well as the advantages, may be interesting. It is estimated that a steam plough capable of doing 10 acres per day will perform the labour of ten men and twenty horses, and will execute the work much more effectively, inasmuch that there will be no injurious trampling of the soil, for we have often seen three, four, and even five horses driven at length drawing a plough, and the stronger and heavier the land the more horses are required, and consequently the more injury is done, for on the heavy land the horses all go in the furrow, thus kneading the land and making it comparatively impervious to air and water even after draining, whereas steam power leaves the land light and porous both above and below the action of the plough by the use of the subsoiling tackle. The saving of the number of horses must be viewed, irrespective of the money saved, because the motive power of steam is derived from minerals, but that of animal power by the consumption of cereal and vegetable produce; and when we consider that two oxen of 125 stones each can be fattened in a year at the same cost from the produce of the farm as is required to keep one horse in good working condition, it demands the serious consideration of the home farmer. We cannot conclude this subject without some reference to the system of continuous corn growing adopted by Mr. Prout and Mr. Middleditch, for it is now notorious that these two agriculturists have been enabled by the power of steam in cultivation to grow corn for a number of years in succession, and in Mr. Prout's case with proved advantages over the mixed culture of corn and roots, as done in ordinary farming, especially upon heavy soils like that of Mr. Prout's at Blount's farm, and it must be very clear to every practical farmer that these results could not have been obtained by the use of animal power only.

WORK ON THE HOME FARM.

Horse Labour.—The weather lately has been sufficiently favourable for the horse labour to make up some of the arrears which had accumulated in consequence of a long succession of adverse weather. It can, however, scarcely be called adverse in its ultimate results, for there is no doubt but the long period of frosty weather has greatly ameliorated the condition of all land with a fallow surface, and thereby diminished the horse labour required in preparing the land for the different spring crops. For some considerable time upon anything like friable soils sowing beans, peas, and vetches has been carried on under favourable conditions. We advise the home farmer now to turn his attention to the sowing of barley and the early sorts of white oats. The great importance of an early season for barley is generally admitted, but the opinion of how best to secure a malting sample is not so generally understood. We must therefore call attention to the fact of barley sown amongst oats in the mixture called dreg, proving in nineteen cases out of twenty to be of a good malting quality. In justly estimating this matter, however true it may be, we must look for some reasonable cause. Is it because the barley stands further apart than when sown alone? Is it not reasonable also to suppose that the oats, being the stronger growth, would overpower and reduce the barley to a poor crop in quantity as well as quality? But such not being the case we are almost obliged to believe that the barley having plenty of room to mature, and the fact of the oats rooting deeper in the soil than the barley, that the space allotted to the barley is the chief cause of its being fit for malting grain when grown with oats. Now this idea, if it leads to any practical conclusion, must indicate that drilling at a wider distance will be favourable to quality of the grain. As an instance we know an extremely well managed farm on a chalk soil where the practice was to drill all the corn at 12 inches between the rows; and although it was admitted to be better for all the crops than the ordinary distance of drilling, still it was more favourable to the barley than any other cereal crop, simply because this grain is

more dependent for its value upon substance and quality than any of the others. We therefore without hesitation advise the home farmer to drill his barley at 12 inches with $2\frac{1}{2}$ bushels of seed per acre; at this distance, too, if need be either horse or hand hoeing may be easily done. Whilst we are alluding to the subject we must object strongly to sowing clover seeds in the barley, preferring to sow seeds in the white oats or wheat sown after a fallow or fallow crop.

Hand Labour.—This will now to some extent be employed in draining upon those farms and fields requiring it. In those cases where the hedging, ditching, and trenching in the meadows has been deferred the sooner it is done the better. Both men and women will also be employed in cleaning and preparing roots for the cutter, both in feeding sheep and cattle; also in sorting and preparing seed potatoes, breaking and sifting guano in readiness to be applied for potatoes and Canadian oats. Shepherds will now be engaged in finishing off the early lambs produced from the horned Somerset and Dorset ewes; in fact, from many flocks more than half the lambs have been already sent away to the Metropolitan Market. The ewes, where they have been well fed with a fair allowance of cut roots mixed with cake and bean meal, will be fit for sale as fast as the lambs go to market. When this is the case the sooner they are sold the better. If, however, they are not exactly fit for the butcher the quantity of bean meal may be increased with benefit until they are sold. The most forward down ewes, both of the Dorset and Hampshire stocks, which lambed in January will now have lambs rapidly proceeding towards the selling weight of 10 lbs. per quarter, and as soon as they arrive at that weight they should be sold, especially in a season like the present, with the roots nearly exhausted in many cases. The mangolds, however, should if possible be retained for the fattening cattle and also the store stock in the yards and sheds; for with a very limited supply of mangold pulped, and also mixed with hay and straw chaff, and $1\frac{1}{2}$ lb. a day of decorticated cotton cake, they will be sustained in capital condition until the grass comes. The yards, however, should be made as dry and comfortable as possible for them, otherwise we have known instances of their being attacked with that fatal disease the quarter-ill, for unless the sheds and yards are bottomed with earth and made with a quick run for the water no amount of straw bedding will keep them healthy for a certainty. Those young animals, both heifers and steers, intended for "baby beef" we usually keep in pairs in roomy boxes in what was formerly an old barn, but we think that we make a good exchange when we turn the rats out and the cattle in.

In this mode of feeding the yearling cattle get about 36 lbs. of mangolds and white oat straw *ad libitum*, with 2 lbs. of cake and 1 lb. of bean or barley meal daily, which will maintain them in improving condition until the grass, such as trifolium, is fit to cut up and be taken to them. Our animals intended for the earliest maturity never go off the straw, but are always under cover from birth to death when sold as beef, which they usually are at from twenty to twenty-four months old. We will name it whilst it is in our mind, for so much of the trifolium sown in the autumn has proved a serious failure through being eaten off by the slugs that where the home farmer considers this green fodder as essential, as we do, he will proceed at once to seed any land which may be clean with the early crimson variety, and the crop will be fit for use at the end of nine or ten weeks according to the season, dating from the 1st of April. We must also remind our readers that the sooner the seeds are sown of all the cabbage tribes the better, because when sown early the infant plants are much more likely to escape the enemy the fly, wireworm, &c. It is now time also to seek for and obtain the sort of potatoes we require for seed, those growing in Scotland being the safest to cultivate.

SEASONABLE HINTS FOR POULTRY FANCIERS.

It is an important season in the poultry yard, and there are now many points seemingly perhaps very trivial on which timely advice may prove useful.

Chickens.—The earliest broods have probably been accommodated in dry sheds, at least at night. Our birds are in January and February always so housed, and being few have the advantage of two coops. Probably most fanciers have twice as many coops as broods early in the year. It saves time and trouble instead of carrying them about to devote two to each brood; one stands permanently in the house or shed, the other is stood out in a sunny but sheltered spot. The broods are in fine weather carried out to the latter in the morning in baskets and taken back again at night. By this time our broods should become too numerous for such moves, and some must be left out altogether. The coops should have sloping weather boards in front to prevent rain and wind beating in, and should be put on dry ground to the south of some wall or shed to protect them.

Setting Eggs.—Now is an admirable time for setting eggs; most of the finest birds we have ever known have been hatched the first week in April. The parent birds should now be strong, and so the germ of the egg more vigorous. Though we have of late been greatly favoured in weather we may expect east winds,

which are very prejudicial to hatching. Hens should be set in moist warm places, and have fresh earth or turf under their nests. It is popularly supposed that none but the very earliest chickens have a chance of competing at the great autumn shows. This is quite a mistake. We have frequently won cups at the Crystal Palace with April birds, competing against the very earliest. Such chickens have of course had much attention bestowed on them, and have always had runs free from the incursions of older birds, which bully the younger ones.

Ducks.—These are now troublesome about dropping their eggs into the water. Those who have small premises generally have their Ducks driven into a house at night, and there they lay their eggs. Those, however, who have larger pieces of water and no house near lose many eggs at this time of year. Later on in the season most Ducks will in such places make their own nests and sit well, but at present there are no reeds and no foliage overhanging the banks to conceal them. We find it well only to feed them in the evening, and then to entice them into a wire enclosure, either detached or in front of a small house. They will then almost invariably lay their eggs in the early morning. Close heated houses are most prejudicial to Ducks, and these open enclosures are far preferable.

Turkeys.—The birds will now show signs of laying. A Turkey hen is often very obstinate about laying all her eggs where the first has been deposited. When, therefore, she seems on the point of laying she should be watched and gently urged in the direction of where she is intended to lay. If a few false eggs are put in a nest and she is made, as if by accident, to come upon it, she will often adopt it.

Guinea Fowls.—If well fed the birds should in such a spring as this begin to lay by the middle of March. The hen generally lays about midday, and the cock keeps watch at a few yards' distance while she is on the nest. It is far easier to find their eggs now than later on, when grass and nettles are long. She should never be disturbed on the nest, but when she has gone away the nest should be examined, and several eggs left in it. A hen will often continue to lay almost daily through a whole season in one nest; but if only a single china egg were left, as for a common hen, she would be almost sure to desert it, and to make another nest in a more obscure place.

Pigeons.—These may now be mated. Birds which were paired last year will take to each other well and quickly. Young birds, too, are generally easily paired, but there is often much difficulty in getting Pigeons to submit to new unions. Those freshly mated must not on any account be put in the same houses with their old mates for a long time.—C.

CRYSTAL PALACE BIRD SHOW.

(Continued from page 188.)

RESPECTING the Show at the above place, which closed on the 4th inst., we may state that compared with such breeds of the Canary as Clear and Ticked Belgians (Yellow and Buff), and Lizards (Gold and Silver), too much liberality, so far as the prizes are concerned in the Marked or Variegated Cinnamons, has been doled out to these two classes for some time. At the Show for 1878 there were but thirteen entries effected in the two classes; in 1879 fifteen; and at the Show just concluded only eight entries were effected in the two classes for the six prizes offered. The two classes for Clear and Ticked Belgians numbered respectively twenty entries in the Yellow representatives, and eighteen in the Buff, each of which class being only apportioned a couple of prizes, whilst the value of the breed is far greater. As a means of improving the schedule it would be better if Classes 35 and 36 (Marked or Variegated Cinnamon) were blended into one class, which alteration would secure for the future the sum of £1 15s., which could be divided into seven third prizes, and apportioned as follows:—Two third prizes for the Clear or Ticked Belgians, two ditto for Gold and Silver-spangled Lizards (not broken-capped), two ditto for Even-marked Norwich, and the remaining prize given to the Clear Buff Yorkshire class. This would bring it on a footing with Clear Yellow Yorkshire, which at the present has three prizes, and why this difference betwixt the two classes we are at a loss to conjecture. Considering the vast number of Yorkshire birds exhibited at many of the North of England Shows, every inducement should be offered to induce the owners of such stylish birds to enter them in full force at the Crystal Palace Shows. Even-marked Goldfinch and Canary Mules also should have a third prize to each class, considering the trouble and expense attending the breeding of good show birds. The Mule birds were a fine show of themselves, especially the Even-marked birds. Mr. Sleep's beautiful bird, which is somewhat new upon the stage, had a very close contest with Mr. Robinson's "Bismarck," a showy-looking bird; but the first prize was justly awarded to the former bird, a real gem, with slight pencilled eyes and beautifully marked in the flights. Mr. Robinson's Mule, although apparently thoroughly well marked, has unfortunately a white feather mixed with the dark ones in one of its wings. There were many other showy birds in the classes.

British birds were well represented, the numbers being about

equal to last year's Show. The classes for Bullfinches, Goldfinches, and Linnets, as usual, carried the sway. The first-prize Bullfinch (which gained a silver medal), exhibited by Mr. Willsher, was very beautiful; but we did not think so highly of his first-prize Goldfinch, which we think too small for a real showy bird, notwithstanding it was in good condition and very cleverly feathered. The first-prize Linnet was likewise a fine specimen—a thorough brow—of the right hue, and not a dark one. In the class for Redpoles and Siskins the latter had the advantage in number and quality generally, the first-prize being larger than the generality of its breed, with the colours well defined. Considering the difference between the two as to plumage it is a mistake to class Siskins and Redpoles together. Blackbirds, Thrushes, and Larks were well represented, the former commanding our attention, the most noticeable specimens being Mr. Sleep's champion Blackbird, the winner of numerous prizes. The Starlings, as they generally appear, were sick in plumage, and although there were but eight entries, still there was much in them to admire. The Any variety of British birds were likewise very interesting, and was a treat to anyone possessing an ornithological taste. When we state that the class contained Crossbills, Greenfinches, Yellowhammers, Cirl Buntings, Snow Buntings, Bramblefinches, Redstarts, Woodlarks, Nuthatches, a Hedge Sparrow, Jackdaw, and Wrens (one named "Sir Christopher," and another named "Jenny,") besides many others, it will suffice to say the class was worthy of examining. Classes 70 and 71 were equally interesting, the first of the two being devoted to "the best collection of six British or Migratory Birds," and the second to "Birds of Passage or Migratory Birds, any variety." We were most pleased with the latter (Class 71), in which there were several Nightingales, especially the prizewinners, which were in beautiful trim, besides several splendid conditioned Blackcaps. The class was made up with a Redstart, Waxwing, Titlark, in addition to the prizewinners. A German Bullfinch was entered, but very properly notified "wrong class."

The Foreign Bird classes possessed the usual attractions, but we noticed the absence of an amateur's collections which have before times graced the stages. Mr. Groom was the lucky winner of Dr. Greene's silver cup, presented to the exhibitor who gained the greatest number of points in the Foreign bird classes. There were the usual number of classes to the section for foreign birds, and a class was established for scarce specimens, named Bourke's Parakeets. Two prizes were offered, but only one entry was effected, which did not surprise us considering that there are supposed to be not more than half a dozen pairs of the same kind of birds in Europe. The prize money would have been better added to the class (90) for Any other variety of Foreign, with instructions given to the Judge to award special or extra prizes to rare and deserving specimens. The classes comprised Red-headed Cardinals, Virginian Nightingales, Waxbills, Java Sparrow, Diamond Sparrows, Weaver Birds, Doves, Love Birds, Bourke's Parakeets, Grass Parakeets, Australian Parakeets, Ring-necked or Indian Parakeets, King Parrots, Green and Grey Parrots, Cockatoos, and a very heavily filled class for Any other Variety. This latter contained birds of various hues and sizes, from the Nutmeg Finch to the Great Blue Macaw. We must not omit mentioning the Piping Crow, which caused considerable amusement during the Show. Amongst the most noted specimens of foreign birds which competed for prizes were the first-prize in Virginian Nightingales exhibited by Mr. Groom, which had the advantage over Mr. Barr's second in quality of feather; the first-prize in Waxbills belonging to Mr. Varette; the first and second prizes in Java Sparrows; the first in Australian Parakeets; a Green Leek, exhibited by Mr. Groom; and second-prize, one of the best Rosellas we ever saw, which would not have been out of place had it been first, exhibited by Mrs. E. W. Chapman; the first and second prize King Parrots, exhibited by Mr. Barr and Mr. Drake, the former exhibitor's bird winning only for condition of plumage in tail. In other respects we preferred Mr. Drake's bird for its superior colour. The larger kinds of Parrots were not up to those we have before seen, Grey Parrots in particular.

The Judges were Messrs. Barnesby and Baxson, Derby; Mr. Doel, Plymouth; Mr. Hills, Sudbury; and Mr. Calvert, York.

VARIETIES.

ACCOMPANYING Messrs. Carter's illustrated Farm Seed Catalogue, in which is represented examples of choice varieties of roots and cereals, is their essay on laying down land to grass, which in addition to practical notes and figures of the most useful grasses gives an exhaustive survey of the different soils of England and the herbage which is found to succeed on them in the best manner. Messrs. Francis and Arthur Dickson & Sons' Catalogue is also copiously illustrated, and contains concise and useful information on laying down permanent pastures.

— SCOTCH CHAMPION POTATOES.—There is, says a correspondent, a great run on these in Ireland at present. The price has gone up from £7 to £12 per ton, and as a consequence very inferior varieties are sold as such. The Duchess of Marlborough's Com-

mittee has ordered £10,000 worth alone, and the Mansion House Committee are also purchasing large quantities.

— **THE PRICE OF MEAT.**—A meeting was held on this subject last week at the Market Hall, Upper Thames Street, London, under the presidency of Captain Fitzgerald of the Buckingham Chamber of Agriculture. The meeting was inaugurated by Mr. Tallerman, who read a very exhaustive paper on an improved means of bringing English-grown meat direct from the producers to the consumers without the intervention of middlemen, who, he stated, ruled the markets and fixed the prices both to the detriment of farmers and the inhabitants of populous centres. On the motion of Mr. G. Hodgson (Warwickshire Chamber of Agriculture), seconded by Mr. G. Howell, and spoken to by the Hon. H. T. Littleton, Mr. J. A. Smith (East Suffolk Chamber of Agriculture), Captain Fortescue (Warwick Chamber of Agriculture), Mr. G. Storer, M.P., and others, it was resolved:—1, That in the opinion of this Conference it is desirable, in order to improve the system upon which home-grown meat is sold, that accurate information concerning all meat markets be procured and published. 2, That public abattoirs and cooling storage chambers be provided in every county. 3, That a system of direct dealing between consumer and purchaser be organised, and suitable accommodation provided in the metropolis to this end. 4, That railway companies be asked to grant to English farmers the same advantages as those enjoyed by foreign shippers. 5, That a committee be appointed to carry out the above objects. The proceedings were brought to a close with the passing of a vote of thanks to the chair. Mr. Tallerman's meat-storing premises under the Cannon Street railway station are on a scale of great magnitude. The chill rooms can be maintained at any low temperature required, and meat can be kept for a great length of time in good condition.

COTTAGE BEE-KEEPING.—No. 4.

THE cottager who starts bee-keeping by the capture or purchase of a swarm, and whose stock is limited to that beginning, will not expect to increase it the first year, although it does sometimes happen that a swarm if strong and early in the season will send out others. These are called "virgin" swarms incorrectly, for there is no virginity about them. In point of fact the same queen leads off the first swarm in both cases; she is simply a very prolific mother. Should such an event happen, the best way to deal with the so-called virgin swarm is to put it directly it has been secured in the place of the parent hive, and to move this off to a new stand. By this means you will most likely check any disposition to after swarming, which should be prevented by all possible means; so that, instead of having a number of weak hives you will have two strong ones, as strong as the circumstances of the season will allow them to be; nor will they require so much food to be given to them in autumn if it should be necessary to feed them.

I have before alluded to the common practice of cottage bee-keepers allowing swarming to go on without check. Nothing can be more unprofitable, as should be evident at a glance; for it is clear that a vastly greater number of bees will be required to make comb and to attend on the young brood where the adult population is divided into three or four swarms, each headed by a separate queen. If all these adult bees were united under one queen so many more of them would be free for honey-gathering in the fields. Let every bee-keeper make a note of this. An excellent rule to be carefully observed every year is never if possible to allow any stock to cast more than one swarm. It cannot be always prevented, even with very large hives and plenty of storage room in supers at the top of the hive, but it will very generally be prevented by following the plan I recommend—namely, by putting the swarms always in place of the parent hives. The common practice, as we know, is to leave the old hive where it stood, and to set the swarm on a new stand. We repeat, Never do this; so will more honey be gathered, and the profit be the greater in after years, seeing that the hives will be stronger in bees as well as in honey storage.

What I have said as to the treatment of virgin swarms, should any come the first year, will hold good for the treatment of all swarms in succeeding years. In this way, supposing the bees to outlive the winters as they come, the cottagers' apiary should double itself every year. We advise this doubling process to continue till the full number of hives is reached, which either the garden space will accommodate or the pasturage of the surrounding country will support. In some places a hundred hives can be kept with great profit, in others from ten to twenty will be sufficient. In the former case it would be well worth the cottager's while to devote his whole time in summer to his bees. But this will only be in highly favoured districts, as for instance where certain flowers are grown in large fields for the manufacture of scents or for seed, as by some of our great seedsmen and florists. When the full stock of hives has been reached which the country can profitably maintain, then will be the time for the full profit of the apiary to be derived from it. This profit will accrue in three or four ways. First, there ought to be from 10 to 20 lbs. of the

purest honeycomb in each super, which should fetch from 1s. 3d. to 1s. 6d. per lb. Secondly, there will be some hives every year to plunder. These should generally be the heaviest swarms of the year, because the combs will be freshest and the honey the purest, as well as in the greatest quantity. Thirdly, there will be some comb to melt down into wax, for which a ready sale can be found at from 2s. per lb. Lastly, a considerable profit may be made by selling supernumerary swarms or stocks. From all these sources together it is not too much to expect an average income of something like 50s. per annum from each stock excepting in very bad years.

Before I dismiss the subject of swarming it seems advisable to give the cottagers a few hints as to the time and manner of managing this, which is the most important event of the year. Swarming in some places begins early in May. In other places it commonly takes place from two to three weeks later. With large hives it may be postponed somewhat later still; but this will be no disadvantage, as the swarms themselves will be larger, and so will make up for any little apparent loss of time by greater activity and success in foraging. The early part of June is on the whole as good a time as any for swarming in cottage apiaries. Early May swarms are sometimes terribly thrown back in our changeable climate by cold weather and starvation. They ought at such times to be liberally fed, often for a whole week. But few cottagers will be found to attend properly to this; still it ought not to be neglected, and full instructions on the point will be given hereafter. It is unwise to try by the use of any artificial methods to force bees to swarm, they are best left to nature. But of course bees must be carefully watched, or else many a valuable swarm may be lost to the cottagers; for this reason it is important that the hives should be in full view of the windows and within hearing of the open door. The noise which a swarm makes can be always heard at some distance, and generally the issue of a swarm may be expected if the bees are observed to be more than usually restless, coming in and out of the doors and windows of the house. These are the skirmishers of the coming swarm, or rather a reconnoitring party on the search for a suitable swarming place or more permanent dwelling. Such hints should be taken notice of and a strict watch should be at once instituted; also everything should be got ready for immediate use.

Another reminder it is important here to give. A swarm, especially a first swarm, will remain no longer on the bush or tree on which it has pitched than is necessary for the collection of the stragglers and the choice of a home. As soon as a fit place has been found by the scouts off the swarm will go, it may be to the trunk of some hollow tree, or to a hole in the roof of some house or church more or less distant, therefore let no time be lost in hiving and settling the swarm. Care also should be taken to dry and sweeten the hives in which the swarm is to be placed. This is best done by putting it out in the sun and air after it has been well wiped and cleaned. No smearing with sugar or herbs is advisable.—B. & W.

BEE-KEEPING IN THE NORTH OF SCOTLAND.

BLACK & LIGURIAN BEES.

I HAVE just returned from a fortnight's visit to the north, during which I delivered five public lectures on "Bees and Bee-keeping," and thus came in contact with nearly all the bee-keepers in the various districts visited. I also took the opportunity of examining the stocks in many apiaries and gave lessons in manipulating. I consider myself therefore qualified to give an opinion of the state of apiculture in these parts, and I regret to say that on the whole it must be an unfavourable one. Starvation and foul brood have between them sadly reduced the number of stocks, the latter pest having obtained a firm hold where skeps are still used. I had the questionable pleasure of bisecting some venerable specimens of skeps, laying open to the eyes and noses of the spectators masses of corruption hitherto undreamt of. Of course there was found no one to defend the insinuations of Mr. Gordon of Gartly (page 180), that the plague had been introduced by Ligurians. Indeed, bee-keepers present declared they had often noticed such a thing as foul brood when cutting up skeps for honey, but never before knew the real nature of it. No wonder the plague has spread under such circumstances. There will now, however, I trust be quite a revolution in the localities referred to. Salicylic acid is already in demand, so are bar-frame hives and clean combs—the three requisites to its complete cure. I think the skep system is doomed in Aberdeenshire. Your old correspondents, Messrs. Cockburn and Shearer of Cairnie, having had a sight of foul brood have already gone in for the bar-frame system. I found both of these worthies to be genuine specimens of the hospitable Scot and keen bee-keepers.

Generally those who have been some years following the modern management have splendid apiaries of strong clean stocks—quite a contrast to the miserable show made by those of the old school, or even those in the state of transition. In every quarter I found great interest taken in my lectures, and I trust the campaign may not have been in vain.

The following is my reply to Mr. Gordon's letter referred to:—
I have always had by far the best results from the Ligurians. In 1876 I sold from one stock the value of £7 16s. in super honey, and in 1878 from one stock over £10 worth.

The Ligurians are certainly not behind the blacks in securing plunder; indeed their superior activity makes them masters in the art, while they, at the same time, are almost proof against invasion. But they are equally proficient in securing nectar wherever it can be had. Here is a case in point. In the autumn of 1878 I sold a stock of Ligurians to a lady living in a district where there were not more than one or two other hives within the radius of a bee's flight. 1879, as everyone knows, was the poorest season for honey and swarms that can be remembered; yet that stock gave three large swarms, which were all hived, filled the only super of honey that obtained a prize (silver medal), at the Highland Society's Show in Perth, and afterwards increased so that a second round of swarming was several times attempted, forty-six royal cells having to be cut out in preventing it.

Yesterday, February 14th, I transferred that stock from its 10-frame hive to a 16-frame one, because the former was even now crammed with bees. The stock with the first daughter at its head was equally strong, the second ditto, and the third a very good one, and all have still abundance of honey left. This certainly is a special case, but I have known others as good. In this case no other stock in the neighbourhood was robbed, and the fact that two out of the three young queens were purely mated with their own brothers shows that my estimate of the paucity of black bees in the neighbourhood is not far wrong.

As to Ligurians introducing foul brood, that is simply a slander. I happened to introduce the first Ligurian queens to more than one district in the north of Scotland, and in every case found this pest in almost entire possession of the field by prescriptive right. Foul brood is the curse of bee-keeping, even in Aberdeenshire, and has been for generations, only the poor people did not know it. When a bee-keeper becomes so advanced as to know how to introduce a Ligurian to his stocks, he is the very man likely to discover the presence of the malady hitherto rampant but undreamt of. If Ligurians introduced foul brood they never could themselves have survived, as from their precocity in breeding they are more liable to the infection than the blacks.

I regret Mr. Gordon's assertions all the more that, from the scarcity of stocks now surviving, the cheap and early introduction of these queens is the only way to a rapid increase. Let Mr. Gordon start a nursery of black queens, and sell them throughout the season even at the same prices as the imported Ligurians, and I assure him he will find plenty of customers. But it cannot be done. The regular establishments in Italy alone can supply us with what we want—a supply of queens to enable us to increase our stocks as early even as May.

I say nothing against the blacks, but, good as they are, I prefer the Ligurians.—WILLIAM RAITT, *Blairgowrie*.

SALICYLIC ACID.

HAVING determined to add salicylic acid in a diluted form to the syrup with which I am feeding my bees, I collected the various recipes and placed them in the hands of my friend and colleague, Mr. J. E. Legg, who has charge of our chemical laboratory, requesting him to prepare the salicylic solution. Finding considerable discrepancies between the amounts of the acid recommended by its various friends, he has been good enough to draw up a paper with details, and I venture to forward it to you for publication.—E. BARTRUM, *King Edward VI.'s School, Berkhamstead, Herts.*

The preparation recommended by Herr Hilbert, the German bee-keeper, is a 10 per cent. solution of the acid in pure spirits. He tells us to add one drop of this solution to a grain of water and use the mixture. A preparation suggested as an improvement on this by Mr. Muth consists of a solution containing rather less than 2 per cent. acid and 2 per cent. borax in water. Both these solutions appear to be used merely for disinfectant purposes. ("Cook's Manual," page 261.)

Two formulae are given for the preparation of food in the *Journal of Horticulture*, October 2nd, 1879; and in the "British Bee Journal," December 1st, 1879, page 169, the recipe of Mr. Cowan is given. It is a solution in water containing 1½ per cent. acid and 1½ per cent. borax. One ounce of this is directed to be added to certain quantities of sugar, &c., and would form a mass containing '0477 per cent. acid.

In the *Journal of Horticulture* (February 19, 1880, page 150) Mr. J. M. Hooker recommends the use of a patent solution "sold in pint bottles containing the equivalent to 5 ozs. acid," that is a solution of 25 per cent. acid. He directs one half-ounce of this to be used instead of one ounce of Mr. Cowan's solution, so that one would obtain a food mass containing '0477 per cent. acid, or exactly ten times as much acid as Mr. Cowan recommends. In the same journal, October 9th, 1879, Mr. F. R. Cheshire recommends a food mass containing nearly four times as much as that recommended by Mr. Cowan—i.e., 80 grains to a 14 lbs. mass of food instead of 8 grains.

It is obvious, therefore, that apiarists are by no means agreed as to the exact proportions of acid to be administered to bees in their food for the cure of foul brood, and inasmuch as their observations are based on different strengths of acid, their results do not admit of comparison. If, however, some definite solution were adopted as a standard, and the amount of it varied in food containing say 10 lbs. sugar, we should then soon arrive at an experimental and therefore sound knowledge of the proportions of acid best suited to the end in view, instead of, as at present, finding one author recommending ten times the amount suggested by another. I would venture to suggest as the standard solution a 5 per cent. solution of acid in water containing also 5 per cent. borax, prepared by dissolving 1 oz. borax and 1 oz. acid in a pint of water. The addition of 1 oz. of this solution to a food mass containing 10 lbs. sugar would give a mass with 0.01 per cent. of acid.—J. E. LEGG, B.A.

OUR LETTER BOX.

LARGE DUCK'S Egg (R. B.).—The weight, 6½ ozs., is large; but as it had another perfect egg within, which is a rare occurrence, the weight is fully accounted for.

EGG-EATING HENS (J. Walker).—We know no remedy; get rid of the hens, buy others, and let them have a little animal food daily.

POWL TONGUEWESS (A. B. P.).—It is a very unusual circumstance, but not the first of the kind that has come under our notice.

INCUBATORS (A. G. H.).—Write to Messrs. Thomas Christy & Co., 155 Fenchurch Street, London, E.C.

PIGEON STEALING (P. M.).—It is impossible for us to tell you how the thieves contrive to steal your birds. A compound of clay, tar, and salt is said to allure Pigeons from their rightful home. Consult the police authorities of the district.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.				IN THE DAY.						Rain.
	Barom- eter at Sea and Sea Level	Hygrome- ter.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature.			
		Dry.	Wet.			Max.	Min.	In sun.	On grass.		
1880.	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	In.	
Feb.	29.661	48.0	45.1	S.W.	41.0	48.0	41.4	48.0	41.4	53.4	0.009
March.	29.440	49.0	46.1	S.S.W.	42.1	52.8	45.0	101.3	42.3	0.154	
Sun. 29	29.385	46.7	43.9	W.S.W.	41.6	52.3	36.1	82.3	50.5	0.009	
Mo. 1	29.359	51.1	47.1	W.	42.7	54.0	42.7	78.3	44.2	—	
Tu. 2	29.374	48.0	45.9	W.	43.6	54.4	41.0	90.0	37.8	—	
We. 3	30.016	53.4	51.0	W.S.W.	44.1	59.0	46.9	94.1	43.3	—	
Th. 4	30.181	50.0	45.0	S.W.	45.2	54.8	48.4	94.1	44.2	—	
Fr. 5	30.181	50.0	45.0	S.W.	45.2	54.8	48.4	94.1	44.2	—	
Sat. 6	30.181	50.0	45.0	S.W.	45.2	54.8	48.4	94.1	44.2	—	
Means.	29.687	49.2	46.2		42.9	54.3	43.5	84.4	38.7	0.008	

REMARKS.

29th.—Fine pleasant day, but not very bright starlight evening.
March 1st.—Wild stormy morning, heavy shower 7.15 A.M.; fine, with very bright sunshine in middle of day; heavy shower, high gusty wind at 4 P.M.; hail 4.25 P.M., temperature falling nearly 20°; cold wet evening.
2nd.—Most boisterous day; furious wind and rain 6 P.M.; high wind and rain in evening.
3rd.—Wild stormy night; fine morning; fair pleasant day; slight showers in forenoon.
4th.—Very fine all day; misty in evening.
5th.—Morning dull; bright sunshine at intervals during the afternoon.
6th.—Calm mild spring day, not much sun.
The barometer readings were rather low; but all the thermometric means are considerably higher than those of last week. Weather on the whole seasonable for the time of year.—G. J. SYMONS.

COVENT GARDEN MARKET.—MARCH 10.

THERE is no quotable alteration from last week. Supplies remain the same, and prices are practically unaltered. Trade quiet.

FRUIT.

	s. d.	s. d.	s. d.		s. d.	s. d.	s. d.
Apples.....	½ sieve	2	0 to 4	Lemons.....	dozen	100	0 0 0
Chestnuts.....	bushel	10	0 10	Nectarines.....	dozen	100	0 0 0
Pears.....	dozen	0	0 0	Oranges.....	dozen	100	0 0 0
Peaches.....	dozen	0	0 0	Peaches.....	dozen	100	0 0 0
Plums.....	dozen	0	0 0	Pears, kitchen.....	dozen	100	0 0 0
Cobs.....	dozen	0	0 0	Pears, dessert.....	dozen	100	0 0 0
Gooseberries.....	½ sieve	0	0 0	Pine Apples.....	dozen	100	0 0 0
Grapes, hothouse.....	dozen	0	0 0				

VEGETABLES.

	s. d.	s. d.	s. d.		s. d.	s. d.	s. d.
Artichokes.....	dozen	2	0 to 4	Mushrooms.....	pottle	1	0 0 0
Asparagus.....	bundle	10	0 10	Mustard & Cress.....	pannet	1	0 0 0
Beans, Kidney.....	dozen	100	0 0 0	Onions.....	bushel	100	0 0 0
Beet, Red.....	dozen	1	0 0	Pickling.....	quart	1	0 0 0
Broccoli.....	dozen	1	0 0	Parsley.....	doz.	100	0 0 0
Brussels Sprouts.....	dozen	1	0 0	Parsnips.....	dozen	100	0 0 0
Cabbage.....	dozen	1	0 0	Peas.....	quart	1	0 0 0
Carrots.....	dozen	1	0 0	Potatoes.....	bushel	100	0 0 0
Capstems.....	dozen	100	0 0 0	Kidney.....	bushel	100	0 0 0
Cauliflowers.....	dozen	1	0 0	Radishes.....	doz.	100	0 0 0
Celery.....	dozen	1	0 0	Rhubarb.....	dozen	100	0 0 0
Coleworts.....	doz.	100	0 0 0	Scorzonera.....	dozen	100	0 0 0
Cucumbers.....	dozen	1	0 0	Seakale.....	basket	1	0 0 0
Endive.....	dozen	1	0 0	Shallots.....	dozen	100	0 0 0
Fennel.....	dozen	1	0 0	Spinach.....	bushel	100	0 0 0
Garlic.....	dozen	1	0 0	Turnips.....	bushel	100	0 0 0
Herbs.....	dozen	1	0 0	Vegetable Marrows.....	each	1	0 0 0
Leeks.....	dozen	1	0 0				

WEEKLY CALENDAR.

Day of Month	Day of Week	MARCH 18—24, 1880.	Average Temperature near London.			Sun Rises.	Sun Sets.	Moon Rises.	Moon Sets.	Moon's Age.	Clock before Sun.	Day of Year.
			Day.	Night.	Mean.							
18	TH	Royal Society at 8.30 P.M.; Linnean Society at 8 P.M.	49.9	33.0	41.5	6 8	6 8	9 16	1 41	7	8 3	78
19	F		50.9	33.0	41.9	6 6	6 10	10 12	2 22	9	7 45	79
20	S	PALM SUNDAY.	51.1	33.8	42.5	6 4	6 11	11 16	3 5	9	7 27	80
21	SUN		50.7	32.5	41.6	6 1	6 13	0 a 26	3 35	10	7 9	81
22	M	Royal Horticultural Society—Fruit and Floral Com.—Royal Bot. Society, Spring Show. (mittees at 11 A.M.)	50.4	34.3	42.3	5 59	6 15	1 39	4 0	11	6 51	82
23	TU		50.7	33.1	41.9	5 57	6 16	2 55	4 21	12	6 32	83
24	W		48.7	31.7	40.3	5 54	6 18	4 12	4 38	13	6 14	84

From observations taken near London during forty-three years, the average day temperature of the week is 50.8°; and its night temperature 33.5°.

SHOW AND FANCY DAHLIAS FOR EXHIBITION.

WHEN praising the Dahlia as one of the noblest of autumn flowers, we are sometimes told that "they are such very coarse plants and flowers." That, however, depends on their culture. Very many flowers are coarse and uninviting when not well grown. Take for example the Chrysanthemum; but very few people will object to these when seen as perfect balls of incurved petals, many of them 6 inches across. So with the Dahlia, many of the best varieties produce globes 6 or 7 inches through, perfect in all respects. Then a great point in their favour is the ease with which they can be grown to produce blooms up to exhibition form. Although the Chrysanthemum or the Aster require a certain amount of dressing, yet the Dahlia can be shown as it grows. Many growers of the Dahlia make a great mistake at the very commencement of the season in preparing the plants too early. Plants struck during the month of April I find produce the best flowers. To obtain cuttings from old stools in that month, it is quite early enough to start the latter during the early part of March. As a rule, our stock is planted on a vinery border amongst slightly decayed leaf soil. Where the stock of old plants is not large they may be planted thickly in ordinary cutting boxes, employing the same material for covering the tubers. In an average temperature of 60° the buds soon commence growing, and when 2½ or 3 inches in length the shoots should be taken off, and if possible with a small piece of the parent tuber attached. The cuttings are placed in sandy soil close to the sides of 5-inch pots, or if there is plenty of space one cutting could be placed in the centre of a 2-inch pot. An ordinary frame placed on a bed of hot manure and leaves is the best place possible for the cuttings. When the cuttings are well rooted they should be potted singly in 4-inch pots, a good compost being four parts of loam to one part of dry manure from an old Mushroom bed. Our plants are usually placed at once in cold pits, keeping them close, and covering well at night until the stock has been established in pots. In case of the plants receiving a check from being root-bound, a shift into 6-inch pots in the second week of May will be necessary. In the beginning of June, the second week is sometimes quite early enough, the plants may be placed out in the beds where they are to bloom.

The Dahlia revels in well-cultivated and rich soil, and can only be induced to produce fine blooms under these conditions. Therefore, the plot set apart for the culture of these flowers should be deeply trenched in autumn, at the same time working-in a liberal dressing of manure. A very good dressing is a mixture of old cow manure broken up finely when in a semi-dry state, mixed with an equal part of horse droppings which have been turned a few times and rendered rather dry. The addition of some fresh soot is also beneficial. I am adding a third of fresh loam and a little bone dust to a mixture as above for Dahlias and Asters. In addition to the manure worked-in over the entire plot of ground at planting time, a compost somewhat

richer in manure is made up. A spadeful and a half is placed for the use of each plant. This is worked well in and mixed with the native soil. Into this the plants are placed, a stout stake having previously been put in at each position to secure the plants to as they advance in growth.

In ordinary dry seasons a mulching of manure from an old Mushroom bed is useful in preventing the soil from drying; this only requires being placed some 18 inches round each plant. Our plants are set out in rows 4 feet apart. The stock will soon grow with great vigour, and care must be exercised to keep the shoots securely tied. Four or five shoots are quite sufficient on each plant, one of which is tied to the stake, whilst the others are secured with strong strands of matting. When the buds are forming disbud freely, and when the flowers commence opening, if required for exhibiting, they must be protected from sun and rain. I find newspapers do very well as shades, but these do not afford sufficient protection from rain, so that painted tin or zinc covers are in all respects the best for Dahlias. Where earwigs are troublesome I have found nothing better than flower pots with a little dry moss in each. Into this material these destructive little creatures go freely, and every morning the moss is shaken over a pail with water in it, and thus the earwigs are destroyed. In selecting blooms for exhibiting, those which have not fully developed should be chosen in preference to those which are further grown. Then, in placing the blooms on the show boards they are greatly improved in appearance when the flowers are set so as just to clear the boards. I accomplish this by a very simple process. A sufficient number of Elder shoots are cut, selected first so as to fit the water tubes as nearly as possible. The pith is then forced out of the stems, and cut to the right length for each bloom. As the Elder stems fit quite tightly into each tube, and the bloom rests on the end, and is supported throughout the length of its stem by this simple cylindrical tube, the flowers are practically safe from ordinary travelling incidents.

Before giving a selection of good sorts for exhibition it may be as well to say a little as to preserving the tubers throughout the winter months. And in the first place it is to be noted that these quickly-grown plants do not produce so many tubers as plants which have grown more slowly; and I would therefore strongly advise those who have old stock plants not to throw these away, but to break them up and plant them in any odd corner for preserving over winter and propagating in spring. If possible Dahlias should be cut down at the first frost, and a few days after they should be lifted and placed under cover to become dry before storing. Cocoa-nut fibre refuse is a capital material for placing the tubers in; dry sawdust is also good; a slight covering of dry straw placed over them as they lie on the floors of the sheds or other structures is also a good means of keeping them safe. In any case it is always advisable to examine the stock two or three times throughout the winter.

The following are good exhibition varieties:—Alexander Cramond, Andrew Dodds, Acme of Perfection, Arbitrator, Aristides, Burgundy, Baroness Burdett Coutts, Bessie Ford,

Chairman, Criterion, Charles Backhouse, Charles Leicester, Delicata, David Saunders, Henry Walton, Herbert Turner, James Service, John Standish, James Cocker, Julia Wyatt, Lord Derby, Lilac Grand, Maggie Fairbairn, Mrs. Stancombe, Miss Henshaw, Mrs. Urquhart, Minnie Bond, Ovid, Royal Queen, Sarah McMullen, Thomas Goodwin, Toison d'Or, Thomas White, Vice-President, and William P. Laird. These are show varieties, and consist of self-coloured flowers, or flowers all of one colour, and also of flowers the ground colour of which is lighter than the marking of the tips of the petals. In the varieties which follow the flowers are striped, spotted, or the edges of the florets tipped with a lighter shade than the body ground. These are fancy flowers, and are very attractive when well grown:—Beauty of Wilts, Chang, Eccentric, Ebor, Egyptian Prince, Fanny Sturt, Flora Wyatt, Gem, Harlequin, Hercules, Henry Glasscock, Laura Haslam, Magdala, Miss Large, Miss Lily Large, Mrs. Purves, Mrs. Saunders, Miss Bond, Peacock, Rev. J. B. M. Camm, Richard Dean, Robert Burns, Sam Bartlett, and Tippy Bob.—R. P. BROTHERSTON.

CELERY CULTURE.

CELERY delights in moist marshy land and a humid even if somewhat impure air, and it succeeds well in the neighbourhood of towns. I make my first sowing of the variety Sandringham White at the end of February in a pan or box, employing any light rich soil, and placing the boxes in a warm pit. The plants as soon as large enough are pricked off into other boxes, to be again pricked out in the open ground when weather permits. For the main crop I prefer the variety Sulham Prize Pink, which I sow two or three weeks later, and in less heat, my plan being to place a small frame on some well spent dung, which will produce a little heat and then decline. Outdoor sowing does not succeed here, although I have raised some sturdy plants in a small turf pit with an old window sash placed over it. I prefer to sow rather late, as there is less chance of the plants "bolting," and they can be grown on as vigorously as possible—an important point, for Celery plants must never be checked. I saw a large bed of plants last year which were rendered completely useless through insufficient supplies of water. Where those plants had a gallon of water they required a barrel. It should be remembered that Celery is a marsh plant, and that there is great evaporation from its foliage during hot or dry weather. A good plan is to prick out Celery plants in a bed formed a little below the surface and near to a pond or tank, so that abundant supplies of water can be readily obtained.

At planting-out time a good supply of well-decayed manure is required. In some gardens plenty of manure can be obtained in winter, none in summer; in others in summer only. But if I can obtain the manure in winter I dig the trenches and place it in at once. This plan offers the following advantages:—The labour is done at a comparatively quiet time; the manure receives plenty of moisture naturally and retains it, instead of being exposed during the process of placing it in the trenches to a hot June sun; lastly, a crop can be grown between the trenches, and the Celery may be planted at any time quite irrespective of the standing crop. I believe it to be a disadvantage, if not a positive evil, to plant far below the surface; 3 or 4 inches is in my opinion sufficient. If very deep the plants are deprived of air for some time; and in winter the excessive wet, which should have drained from them, is retained, rendering them more liable to be destroyed by frost.

Single lines of Celery I find occupy too much ground to suit my requirements; so, with the exception of an early row, I plant in beds. This system has other advantages besides that of obtaining an extra quantity from the same plot of land. The individual plants are not so much exposed, and the labour of earthing-up is considerably reduced. A greater depth of manure is required for a bed than for a single row, but not so much of either as for the same number of plants placed in single lines. The beds are 4 feet 6 inches wide, and the plants are 8 or 9 inches apart in rows across the beds 15 inches asunder. I make a gauge for this purpose 15 inches by 4 feet with the distance from plant to plant marked in pencil, so that the men in planting have but to place the gauge against the last row and plant opposite the pencil marks. The plants are then straight both ways.

I seldom earth-up any except the early plants until October, as Celery does not grow so well after it is earthed, and no water can be applied. To keep the plants together and encourage the heart I tie them rather loosely with bast. Two boards the

same width as the beds are employed while placing the first lot of earth. These are laid across the bed against the plants; the soil is filled in between the boards, which are afterwards drawn out; the soil is pressed round the plants, and so on until the bed is completed. I also obtain as much coal ashes as possible for this purpose, as it keeps away worms and blanches the Celery better than soil, besides rendering the plants less liable to injury by frost.

During the two last severe winters frost has in many cases injured Celery very much, but I have had very little loss in this respect, and I attribute my good fortune to three causes. First, that of planting somewhat shallow, so that when the plants are earthed the trench is well below the roots, thus securing good drainage. Secondly, to the free use of ashes; and thirdly, to planting in beds; for when the beds are banked up there is a mass of soil of from 6 to 8 feet wide, as I earth a full foot on each side beyond the plants. Litter of any kind strewn over the top is a good protection, but that I am unable to procure for even a small quantity, and as I usually grow about four thousand plants it is quite out of the question with me to cover them; but by adopting the methods I have stated my Celery has survived the severe weather.—R. CATT, *Gardener, Caterham Asylum.*

BOUVARDIA CULTURE IN SMALL GARDENS.

As a rule I find that amateurs are most inclined to grow plants of two distinct characters, one class being those with ornamental foliage, which make handsome plants in a small state for vase, room, or table decoration; the other includes those plants most worth growing to supply a large quantity of cut flowers, and amongst these none deserve more attention or will give greater satisfaction than Bouvardias. The choicest varieties can be grown as easily as a Pelargonium, and the flowers they produce are invaluable. Indeed I know of no plant so easily cultivated that produces such exquisite flowers, and everyone who has a greenhouse should grow them in numbers. Many only know them as autumn and winter-blooming plants, but a few of them might be grown to bloom nearly all the year round. It is only by pinching out the young flowering points to keep the plants dwarf and late in blooming that they do not bloom continually, for if every shoot was allowed to terminate in bloom and was then cut, so as to insure young growths pushing out again, a constant succession of growth and flowers might be maintained.

Those who have no stock of these plants at present should procure a few at once. They may be obtained from any nurseryman or florist; and to insure success endeavour to procure plants that have not been grown in a high temperature, because in the first place this is unnecessary, and further if they cannot be accommodated with an equal heat when they are received they will receive a great check, and perhaps never recover. From May until October they succeed well in a cold frame.

The plants generally received from nurseries usually have a stem some 6 inches in height, stopped at the top, and branching into three or four small shoots. These plants are quite good enough to start with, and they may be grown in 3 or 4-inch pots until they are bushy plants. If half a dozen plants are bought they may be readily increased by cutting all the young shoots off when they are 2 or 3 inches long and inserting them as cuttings. They strike freely in leaf soil and sand with the assistance of a little bottom heat. If there is no hotbed convenient to plunge them in they may be placed on the top of a flue which is slightly heated. A close humid atmosphere assists them, and where this cannot be supplied in the usual way only fill the pot half full of soil, insert the cuttings, and place a piece of glass over the top of the pot, and keep it there until the cuttings are rooted. When rooted in a hotbed or any strong heat they should be gradually hardened off, and can then be potted singly in 3-inch pots, which are quite large enough for the first shift. The soil employed should consist of loam, leaf soil, horse droppings, decayed cow dung, and plenty of sand. Failing any of these ingredients, road scrapings in which there are a good quantity of grit and horse droppings will answer. Drain the pots carefully, water after potting, and place the plants in a cool frame under a handglass, or in any part of the greenhouse or conservatory where they will not be too fully exposed to drought or sunshine until they have formed a number of roots in the new soil. By that time they will be growing rapidly, and as soon as the centre shoot is 6 inches high pinch out the point.

All the buds along the stem will thus be induced to start into growth, and if allowed to grow they will all bloom in a few weeks afterwards. By allowing half of them to grow on, and taking the points out of the other half, a succession of bloom can be secured at any time. In fact, the quantity of bloom they bear at one time, or the time they do bloom, all depends on the stopping of the shoots. By keeping one or two dozen plants and stopping them in succession a constant supply of bloom will be produced.

In summer they will flower freely in a cold frame, or sometimes in the open air, and in winter with the heat of any ordinary greenhouse. In large gardens all the *Bouvardias* are frequently planted out during June, July, August, and September, and lifted and potted afterwards, but this plan only applies to plants grown for late autumn and winter-blooming, but for continuous flowering it is unsuitable.

In 1878 our planted-out *Bouvardias* did very well, but in 1879 the same system was nearly a failure, and as a rule I prefer pot culture to any other mode. More flowers are produced by keeping the plants in pots, and they may be kept in better health, as lifting them from the ground at potting time frequently gives them a severe check, from which they do not recover before a great part of the winter is over. If *Bouvardia* cuttings are struck in April and transferred to small pots early in May they may be shifted into 6-inch pots by the end of July at the latest, and they would not be potted again until the following spring. Handsome plants may be secured in 6-inch pots, or larger still in 8-inch pots. Where there is the means to keep two or three batches of plants they may be so treated that they will bloom after one another. This will be best done by resting a number of the plants at different times. The soil at the roots should not be entirely dried, but just sufficiently to stop growth for a time. When thus treated some of them will lose nearly all their leaves; and when this is the case they may be stored in any cool dry dark place for a time, like *Fuchsias* in winter, and about a month or more before they are wanted to bloom again they may be started into growth by being placed in more heat and receiving more water. Aphides sometimes infest them, but it is an easy matter to keep the plants clean by sponging, fumigating, or any other ordinary means commonly employed for destroying this insect in hot weather in summer. With plenty of heat and every cultural attention nearly all the numerous varieties of *Bouvardias* will flower freely; but with ordinary attention *Vreelandii*, a pure white, free-blooming, excellent variety, and *Hogarth*, of the same character but producing scarlet flowers, are the most useful.—M. M.

PEACH PRUNING.

LET me repeat that "thinning the fruiting wood but shortening little if any of it" is not calculated to promote that condition of robust health and high fertility that is the sole end and aim of sound practice. Without an intelligent and judicious system of culture Peach trees soon deteriorate, hence the danger of laying down inflexible rules. The condition of each tree is our best guide for the treatment of it alone and not for the whole of the trees. For example, I have Lord Palmerston and Walburton Admirable Peaches growing side by side; the first I found this season in such a bad state that the whole of the branches were cut off to within 2 or 3 feet of the base; the second, on the contrary, was in such excellent condition that a slight thinning and shortening was sufficient. Experience gives a feeling of certainty that the Lord Palmerston will be a fine tree once more in a couple of years because its main branches and roots are healthy, but without such treatment it would make no satisfactory growth, and soon become one of those stunted unsightly objects that are but too often seen wastefully taking up valuable wall space.

Slender shoots with single blossom buds, but with no wood buds except the terminal one, cannot yield fine fruit; they will bear fruit perfectly well—fruit, too, that is juicy and well flavoured, but it is always small. Now such shoots denote incipient exhaustion, which if not checked leads to premature decay. Retain them, and you certainly get the fruit they yield so abundantly but at the cost of greater debility; remove them, and although you do not get so much fruit yet it is finer, and with it comes the certainty of a subsequent abundance equally fine upon the vigorous growth induced by judicious pruning.

A Peach tree mismanaged soon becomes exhausted and shows it clearly, but if healthy though weak—i.e., without

organic disease, it may be restored to its pristine vigour in a single season. Experienced practitioners will know how unmeaning is the term "extension system" in this case, but amateurs and beginners are so apt to adopt such popular titles, and so easily misled by them, that they ought never to be let pass when at all misty or vague.

Mr. Long may be congratulated upon his intelligent practice, and the lucid and able manner in which he has explained the reasons and results of his treatment.—EDWARD LUCKHURST.

It will, perhaps, be sufficient for Mr. Long of Thornes House, Wakefield, to state that I reside only a few miles from his place, but some hundreds of feet higher above the sea, and in a considerably worse climate; but I have had no difficulty whatever in ripening our Peach shoots to their extremities on every tree in all our houses both early and late, and if he has not succeeded in doing the same his case must be an exception to the general rule round Wakefield, for most of his neighbours have succeeded in maturing the wood. In our "forcing houses" the wood was ripe in July, and in the late houses in good time, but they needed a little more attention of course. In proof of what I say, I send you the extreme unpruned points from shoots several feet in length of Peaches and Nectarines, which will, I think, speak for themselves, and they are samples of the shoots on every tree from base to point.—J. S. W.

[The shoots are hard, brown, and well matured. The internodes are less than an inch in length, one shoot 7 inches long having nine nodes bearing nineteen fine flowers, the terminal growth and the lateral growths being as stout and healthy as the flowers.—EDS.]

THE WALL GARDEN.

ALMOST every garden has a wall of some sort, and it may be either an object of interest, or a hideous red brick structure, which spoils all the rest of the garden. There is no scene more really desolate and dreary than the neighbourhood of London when you have passed beyond the populous and busy streets and find yourself in the outskirts of the great city, amongst piles of bricks and mortar and half-finished houses. The first settlers in those barren wastes of brick walls are much to be pitied; but ere long the town stretches out beyond them, and the bright red of the newly-built walls rapidly becomes sobered down by the smoke of London, of which the new colony soon becomes a part.

But old places have old walls, and in those walls are nooks and crannies, which are just the places many plants choose for their natural home. Mosses come first, and though almost imperceptible in themselves, and not beautiful except under the microscope, their effect in subduing the hideous bald colouring of brick is wonderful. As the walls grow old large plants find room to strike root into the mortar, and seeds sown by birds scatter a variety of vegetation over a small space. In one square foot of surface a dozen different species may sometimes be found, giving a botanical interest to those buildings which are visited on account of their historical associations. I am not sure that it would be possible to approach by artificial means the effect produced by Nature after the lapse of centuries, but much might be done to make any ordinary garden wall both interesting and beautiful.

One of the plants which seem most at home on a bare wall is the red Valerian (*Centranthus ruber*). The seeds of this Valerian seem to have a remarkable vitality, and were used formerly for embalming the dead. Seeds used for this purpose in the twelfth century were removed and sown in our own times and actually grew. This extraordinary vitality in the seed may be of great use to a plant which grows on bare rocks and perpendicular walls. Immediately after leaving Devonport station on the Cornwall line this plant may be seen growing in the greatest abundance on each side of the railway, and clothing the rocky cuttings with its beautiful red flowers. Further west it grows so luxuriantly about the walls and buildings of the picturesque old town of Fowey, that it has been named by the inhabitants "Fowey Pride." Berkeley Castle never looks so well as when its grey walls are lit-up by the bright patches of colour which the Valerian imparts to every ledge and buttress in the height of summer. The variety is quite a different one from that which grows in the west; the latter is a dark red, but in Gloucestershire it is a bright pink.

Another plant which adapts itself to wall life is the yellow Fumitory (*Corydalis lutea*). This is a beautiful plant, not half so well known as it ought to be, for it will grow almost

anywhere, even in deep shade, and the foliage is most graceful and delicate. In the stable yard at Anthony, a fine old house in Cornwall, the sides of the steps up to a loft above the stable are almost covered with immense plants of this beautiful *Fumitory*. No doubt it is regarded by the stablemen as an "old weed," and yet there are few plants in the gardens themselves more worthy of attention. Finer specimens of the *Corydalis* could not be found anywhere, so it is evident that it delights in old mortar, and that a perpendicular wall is just the place for it to grow luxuriantly.

Another special pet of mine, which is very common in the damp and mild counties of the west, is the Ivy-leaved *Toadflax* (*Linaria Cymbalaria*). This is one of those plants which seems so tenacious of life that nothing will destroy it when it has once taken possession of a place. There is an old Pine pit in my kitchen garden where it grows abundantly. I arrived once just in time to find the gardener making his last stroke with a stiff broom in sweeping it all away. He thought it was "naughty rubbish," and that along with decayed Cabbage leaves and such things it should be swept away to the dung-yard. Alas! I thought, my beautiful *Toadflax* is destroyed, but a few months later on there it was established again, its pretty little lilac flowers as happy as ever among the dark green leaves. It is certainly a weed, but it could never be troublesome, and I strongly recommend anyone who wishes to make an old garden wall picturesque to try the Ivy-leaved *Toadflax*. Like many other wall plants it does not like transplanting. It seems to become attached to the place where it was born and bred, and to resent the interference of the rude hand which would drag it away to other scenes and new habitations.

Ferns are of course quite at home on an old wall, and the smaller species can never be in the way. The Wall Rue is a pretty little plant, and is common in all the western counties. It requires much care to get it to grow after removal, but it is sufficiently interesting to make it worth the trouble, and when it has once taken to its cranny in the wall it will grow on and increase. The *Ceterach* is a more beautiful Fern and not quite so common. This, too, is worthy of a place in the wall garden. In every case in transplanting the wall Ferns it is best to be content with small plants. The temptation is to seize on some large specimen which looks as if it would at once make a grand show, but it is only too likely that such plants would not bear transplantation. Try smaller plants, and they will succeed with care. In many places *Asplenium Trichomanes* makes a lovely wall plant, its large bosses of green having a very picturesque effect.

The *Stonecrops* are easily cultivated, and during the short season in which they flower they are very striking. They must, however, be placed on a ledge or on the top of the wall. *Sedum acre*, the yellow *Stonecrop*, will make fine patches of the brightest gold with very little trouble. It will grow best fully exposed to the sun. *Sedum anglicum* is also a very interesting wall plant, and both are common wild flowers. The common *Houseleek* is more curious than beautiful except to those who can appreciate the beauty of form displayed in their fleshy rosettes. They seem to live almost without any means of subsistence. Cottagers are very fond of growing a patch of this *Sempervivum* on the slates or thatch of the roof. Other *Sempervivums* have become the fashion now in our carpet gardening. Some of them are very beautiful, and all will do well on a roof or wall.

Many of the *Saxifrages* adapt themselves to wall life, and their vivid green is very attractive. Many other plants might be mentioned, but enough has been said to show that our garden walls need not be hideous in their barren nakedness, but that with a little trouble and care anyone may succeed in clothing them with pretty and interesting vegetation, which will form by degrees a wall garden.—A GLOUCESTERSHIRE PARSON.

TRAPPING SNAILS.—As the season is again at hand when gardens will contain many young plants which will be liable to be destroyed by snails, it may be useful to state that one sure if old way of destroying these pests is to take a handful of bran and make a little patch of it a few inches square on the ground close to or amongst the plants, and cover it over with a cabbage leaf. A number of little patches of the bran can be placed round a bed of anything, or a patch here and there can be put down over the whole garden. When the snails are plentiful they will gather in such numbers as to completely hide the

bran, and the quickest and cleanest way to destroy them then is to shake a small handful of hot lime or salt over them, and put down a fresh patch of bran a little way off. I have killed many thousands of snails in this way lately, and found the plan very valuable.—J.

MEALY BUG ON VINES.

THIS is justly admitted to be one of the worst insects which can infest the Vine; and in gardens where glass houses are so few that all kinds of plants have to be placed in the vineries at different times of the year it is very difficult to keep the Vines free from the pest. In one of the vineries here which contains no plants but has been established for years before I took charge. Every winter an attempt has been made to clear it out thoroughly at the time the Vines were pruned and cleaned. This was so far successful that the insects were not able to increase so rapidly as to do much harm by getting on the bunches before they were ripe and cut. This, however, did not altogether satisfy me, as my desire was to annihilate the enemy.

During the winter that has just passed a determined effort was made in this direction. After being pruned the loose bark and rough material was carefully scraped from the rods. They were then washed with water and spirits of wine, as has been recommended frequently to kill this insect. In a week or two afterwards they were painted over with Gishurst compound so strong that no more water was put into the compound than would make it sufficiently thin to work with the brush on the rod. In a week or so afterwards Fowler's insecticide was applied in the same way, and later on the rods were rubbed over with Speed's annihilator. After this we made sure of having no more trouble on these Vines, but what was our dismay on looking over the rods a week or more after they were started into growth to find the bug out on them as if they had never been cleaned. All our washing, brushing, scrubbing, and painting of every inch of Vine, glass, wood, and floor had apparently been of no use. To wash the Vines again with the buds bursting was not to be thought of. The only plan I could think of was to let a young man look over every inch of the rods twice a day, morning and evening, and destroy every vestige of bug visible. This has been done every day for the last six weeks or more. Hundreds of bugs have been killed in that time, and I am now venturing to think that there are fewer bugs in this vineyard now than there has been since they were first introduced. It is difficult now to find one insect, and I am in hopes that by a little perseverance they will be completely extirpated.

As it is well known how difficult it is to entirely destroy this pest, I think it might lead to some good result were the plan we have lately adopted tried in other places where mealy bug prevails. Of course it should be begun as soon as ever the Vines are started into growth, that they may be frequently looked over before they are in leaf.—J. MUIR.

GALVANISED WIRE.

MR. SIMPSON, on page 176, says the fault is in the wire when Peach shoots are injured, and no proper tying will alter it. I have had as much practical acquaintance as most people in the use of this wire. I have not a single particle of painted wire about my place, and I never suffer from injury to shoots except when they are tied too tightly or not loosened when the growth swells. I use it in all thicknesses, and have had both fruit trees and plants trained to it almost since the first introduction of the system. I do not like wires too near together, and I always tie at every wire, and every tie has to be looked at, at least three times during the growing season as far as wall or espalier fruit trees are concerned, especially such as Plums, Pears, and Peaches. As white paint is merely lead mixed with oil and turpentine, it only protects the iron. Zinc paint would do just the same, but galvanising the wire is cheaper and more effectual. I use cut wire for pegs for flowers, to support Strawberries when the flower shoots are too heavily laden with fruit, and to train delicate creepers to in stoves and greenhouses. I never saw any injury which could be attributed merely either to the heat or cold, or the action of the wire itself, except when sufficient care is not taken to prevent friction. Plum trees on a wooden fence that have been in full bearing now on wire for six years are just as free from injury from wire as those I have only trained three years, and the wires in my vineyard have been in use twelve

years without doing damage. Maréchal Niel Rose, Lapageria rosea, Clematis, Dipladenia, Clerodendron, Torenia, Bougainvillea, Begonia, Ferns, &c., have all been trained in my houses to galvanised wire, and I use it cut in lengths like sticks.

Mr. Keeling says about young Peach trees it was at the end of two years, if his memory served him, that while they were preparing to paint he observed a black spot on almost every shoot where the wood rested on the wire, the gross shoots being the most affected. Just so; every gross shoot, I submit, was tied too tight, and ought to have been freshly tied, perhaps three or four times, during the period of growth. —C. P. P.

NOTES FROM KEW.

SAXIFRAGES.—On the rockery in the herbaceous grounds the *Megasea* type is well represented, the plants being now flowering very freely. One of the best is *S. ligulata*, which bears its large pale flesh pink-coloured flowers in dense corymbs that are well supported above the foliage on long peduncles. This species is an excellent one for yielding supplies of flowers for cutting purposes. *S. crassifolia* has shorter stouter peduncles, with more purple in the flowers. None can, however, equal the handsome *S. Stracheyi* which is flowering on the old rockery near the new range. This beautiful Himalayan species has pink calyces and large spreading white petals of great substance, the flowers being borne in corymbs of moderate size.

HELLEBORUS PURPURASCENS, a native of Hungary, is bearing its peculiar metallic purplish-tinted flowers. It succeeds very well on a rockery, and appears best near the higher portion, as the flowers being slightly pendulous cannot be seen so well at a lower level. In striking contrast to the Hellebore is the charming little *Primula rosea*, of which the brilliant crimson-coloured flower buds can be just seen. This handsome species cannot be too generally known and grown; indeed it will no doubt soon become abundant, as it is readily increased from seeds.

CROCUSES.—On the north side of the herbaceous grounds wall a number of species are now flowering in a bed specially prepared for them some time since. The majority are natives of South Europe and the Mediterranean region, in such districts as the Crimea, the south of Italy, Greece, Turkey, &c. Of those with flowers tinted with various shades of yellow from pale sulphur to a golden hue, the best are *C. aureus*, *C. stellaris*, *C. chrysanthus*, and *C. sulphureus*. The best of the purple and lilac-coloured species are *C. versicolor*, *C. banaticus*, *C. Sieberi*, *C. etruscus*, *C. Imperati*, *C. vernus*, and *C. vernus neapolitanus*. *C. biflorus* is a handsome species with symmetrical white flowers streaked with lilac, affording a pleasing contrast with the bright yellow stigmas. *C. Weldeni* and *C. argenteus* are somewhat similar to the last, but have no streaks on the inner side of the perianth.

ORCHIDS.—There are several very pretty and interesting species flowering in their allotted house, especially *Odontoglossums* and *Dendrobiums*. Of the former the fragrant *O. pulchellum* is especially noticeable. The sepals and petals are pure white, the labellum being tinged with pale crimson. The flowers are borne in spikes, and continue in good condition for many weeks. *O. Rossi majus* is a desirable variety of this pretty little Mexican Orchid, differing chiefly from the type in the larger flowers and clearer colours. It forms an excellent companion for *O. Cervantesii*, but the latter is rather the more attractive of the two, the bars upon the sepals and petals being arrayed concentrically, almost as though they had been struck with compasses. *Dendrobium onosmum* is very pretty; the flowers have a rich purple-fringed labellum with paler sepals and petals; *D. fimbriatum*, *D. aggregatum*, *D. Wardianum*, and *D. nobile* are well represented, the latter by a very good variety; *Epidendrum macrochilum*, with its large purple-streaked labellum, the small pale blue *Vanda cerulea*, *V. tricolor*, and the orange-coloured *Ada aurantiaca* are all flowering freely. —L.

CUTTING SEED POTATOES.—Reference has been made in the Journal lately to cutting seed Potatoes. An objection offered was, that the tubers "bleed" too much if cut and planted immediately. Then the advice was given to cut the Potatoes some time before planting, in order that a skin might be formed over the wounded surface; but in this way the pieces shrivel very much. The plan on the Northumberland farms thirty years ago, and probably still employed, was to

dust the freshly cut pieces with newly slaked lime, and the pieces shrivelled very little. —H. T., *Humshaugh*.

BLIND STRAWBERRY FLOWERS.

THIS term is applied by most gardeners to those Strawberry blooms which open and flower but fail to form fruit. No doubt everyone who has grown Strawberries in pots will have observed the kind of flowers just referred to. With some growers, in some seasons, and under certain circumstances they are the rule, not the exception. Some attribute this to weak imperfectly matured plants, others to the flowers not being properly fertilised. In some cases both of these causes may contribute to the undesirable end, but from close observation I am of opinion that there is another cause which produces more blind Strawberry flowers than either. The cause I mean is allowing the plants to become too dry at the root when in bloom. Supposing a Strawberry plant to be in full bloom, and it is once allowed to become too dry during this period, many blossoms will be seen to have black centres in a few days afterwards, the sure indication of blindness; and the fruit which forms will, after it has swollen a little, show various deformities. I have observed this result on various plants at different times and in several seasons. Keeping Strawberry plants uniformly moist at the root when in bloom I consider contributes as much to a good set of fine fruit as any artificial fertilising they can have. It is very bad practice to allow any Strawberry plants to suffer through deficient supplies of water at the root at any period during forcing time; but being allowed to become dry before they come into bloom or afterwards does not do so much injury as just during the time they are in bloom. As most Strawberry plants are liable to become quickly dry through having so many roots in small pots, I would advise all who grow them in this way to pay great attention to watering, and especially when the plants are in bloom. —M. M.

SMALL BIRDS.

In reading the interesting article by "WYLD SAVAGE" on page 162 I was not a little surprised to find the chaffinch charged with doing harm to fruit trees, which is so contrary to my experience that I cannot allow it to pass unchallenged. Over thirty years spent in gardens has taught me which birds are enemies and which are friends to the gardener. I am pleased to have to record my opinion in favour of the chaffinch. It does no harm to the buds or fruit of fruit trees, not even when pecking the former for insects; and it certainly never touches a fruit of any kind, but is ever on the alert for insects, especially prior to and during the breeding season. It feeds principally on small seeds, and will pull up every Turnip, Radish, Cabbage, and other plants just when they are appearing, but it takes no further notice of the plants afterwards. If the gardener were to coat the seeds of Brassicas with red lead before sowing, then, instead of the chaffinch being an enemy it would be one of his best friends, devouring immense quantities of small seeds that would develop into weeds, and the insects with which it varies its diet would also do considerable harm.

"WYLD SAVAGE" exclaims, "How difficult it is to protect birds!" and observes "that the little fruit the thrush eats is a mere nothing when compared to the immense benefit he confers upon us in spring and autumn with his lovely singing." Ask any gardener what fruit he would be able to supply his employer with if the fruit were not safely protected from the thrush. There are very few employers who do not set more value on the produce of their fruit bushes in summer than they do on the song of the birds in spring. The song of the thrush is no doubt delightful to everyone, but the market gardener has very different feelings. Rent will have to be paid, capital expended must bring some return, and labour is not expected to be given for nothing.

I have, though a gardener, taken up the cudgel before on behalf of the birds. All are more or less useful, but some do too much injury to be tolerated, and others are, from their destruction of the fruit buds, altogether undeserving of preservation, notably the bullfinch. —G. ABBEY.

In reply to "W. R. R." on page 178, it never was my intention to convey the idea that birds generally did more harm than good, but simply to show that at certain seasons of the year certain kinds of birds cannot be tolerated with

impunity. One instance will suffice. It is a well-known fact to everyone connected with horticulture that the bullfinch will in the spring of the year completely denude fruit trees and bushes of their buds. To meet such arguments as this we are told that the young birds are reared on insects injurious to man. Did anyone ever see a nest of young bullfinches before the hedgerows were in leaf? I very much doubt it. I have no wish to dispute the scientific facts as regards the amount of insects and grubs destroyed by the birds, but the fact still remains—a great amount of injury is done by the small birds, which in many cases more than counterbalances whatever good they might do; and it behoves gardeners to be observant and watchful, so that they may be able to distinguish their friends from their foes.—PETER FERGUSON.

FERNS, HOW ARE THEY REPRODUCED?

I DESIRE to tender my thanks to Mr. Castle for going into the subject in the way he has, for I think he has said all that could be fairly advanced for the views he defends. I am well acquainted with the theories he has endeavoured to make plain, and will review a few of the leading passages in the article referred to. Mr. Castle expresses surprise at such opinions as mine being advanced in these days, when the theories he puts forth are established facts. I propose we say established opinions. Mr. Castle presumes that I did not use a microscope in my researches, or my opinions would have been speedily changed. I have not employed that instrument, but have used a good glass with no results. A friend of mine, however, has one of the best microscopes in Sheffield, and he has examined the prothallium of Ferns, and has failed to discover those reproductive organs that are referred to, and he had also the assistance of another investigator, but neither could find what they were in search of. But as Mr. Castle presumes I have not used a microscope I may also presume that he has not used one to arrive at the figures he gives to illustrate the subject in hand, for figure 23 he makes to represent the prothallium of *Lastrea Filix-mas* of its natural size. Now anyone that has examined the full-grown prothallium of that plant knows that it is more than twice the size represented by the figure, and no such results would be produced by a half-grown prothallium as are represented by figures 3, 4, 5, and 6. As I have Mr. J. Britten's work with the same figures I come to the conclusion that Mr. Castle has employed the figures without knowing whether they were right or not. I would also call attention to figure 24, which is shown with the first frond proceeding from amongst the rootlets, which is represented as being the male part. At the same time the archegonium, or female part, is said to be formed near the indented part of the prothallium, and the young frond is said to proceed from this part.

I will now refer to the quotations given by Mr. Castle from Mr. Moore's work on British Ferns. Mr. Moore writes—"The germination of the spores of Ferns has excited much inquiry, the result of which leads to the inference that 'something like' sexuality exist among the higher groups of Cryptogamous plants." In another place Mr. Moore writes—"The intermediate forms of Ferns and allied plants of the nature of hybrids is suggestive that something like fertilisation does occur among Cryptogams." Now the first part of Mr. Moore's remarks seems to imply that he thought there might be something in the discovery set forth by Suminski; but to my mind the latter part helps to nullify the former, for there is proof positive that the abnormal forms of our British Ferns are not the result of cross-fertilisation. Further, we have no proof of the existence of a hybrid Fern; and although Mr. Castle remarks a few probable hybrids are known, yet these are characterised by the usual sterility and produce no spores at all, or imperfect spores, from which nothing can be raised. As to *Lastrea remota*, *Asplenium germanicum*, and *A. microdon* being supposed hybrids, the two former are classed by Mr. Moore as distinct species, and they both produce perfect spores. *A. microdon* is no doubt a sport of an intermediate form which has led to some supposing it to be a hybrid. Mr. Castle admits it possible to obtain distinct varieties without cross-fertilisation, for he says, "It has been found that spores taken from different portions of an abnormal frond occasionally give rise to very dissimilar forms;" but it seems rather strange that he should question my statements about the raising of plants that are so very distinct from the parent plants, for he implies that there might be cross-fertilisation. He says, "Mr. Eadon adduces certain instances where spores collected from a particular Fern were sown, and among the young Ferns pro-

duced were some of a distinct character, but he does not state what method was adopted to exclude other spores." No, I did not, but I will do so now. The compost was baked before being used for the *Scolopendrium*s referred to by me, and I saw the plants in their first stage, but I never saw anything mixed with them.

I will now briefly refer to E. J. Lowe, Esq., who, according to Mr. Castle, has fully corroborated what had been previously written upon the subject of fertilisation. Mr. Lowe's own words as given by him to the public some time ago are, "That by taking two or more fronds of the same class of plant, but of an abnormal kind, and sowing the spores from them in a pot thick together, so that when prothallia makes its appearance they will be so close together that the 'chances' will be that the prothallia produced from one frond will fertilise that of the other, and thus produce plants quite distinct from any of the plants from which the frond was taken." Indeed I fail to find anything that Mr. Lowe has put forth that can be regarded as proving the theories in hand; and further, we find nothing said in that gentleman's works about those theories, so that it cannot be very many years since he adopted them, and they appear to be a long way from being mature.

I will now refer to one or two passages in Mr. J. Smith's new edition published in 1877. I believe Mr. Smith second to none as a pteridologist of the present day, and he does not fully accept the theory of Count Suminski, but uses doubtful expressions when referring to it, but reasons in favour of the budding of the prothallium, for I find the following written by Mr. Smith—"Another point of some practical importance is, that in general only a single plant bud is formed on each prothallium. This may be supposed to be owing to the vital functions of the prothallium not being able to support more in that respect analogous to only one ovulum being fertilised in ovaries of many flowering plants. Admitting that, then, how are we to explain that on removing the plant bud a new bud is formed? and even as many as eight to ten have been obtained from one prothallium, each of which by proper care became a plant. Then, again, experiments have shown that by dividing the prothallium from the base upwards with a sharp instrument into two or even four parts, each part produced a plant bud. Seeing this, it is reasonable to infer that prothallia have the power of producing plant buds analogous to the leaves of *Begonias* and other plants."

In conclusion, I would suggest that as more than thirty-two years have passed away since the Count put forth his theory, surely those experimentalists who believe in it ought to have had some better proofs to give than those that are given, which are nothing better than bare conjecture.—JOHN EADON, *Sheffield*.

I READ Mr. Eadon's remarks upon this subject in the *Journal* with some pleasure, but was surprised to find he knew so little of the real structure of Ferns. Mr. Eadon may probably regard the now well-known structure of Ferns as only theoretical, but that is an incorrect view to take of the matter. In a later issue, however, some most interesting and valuable remarks appeared by another correspondent, giving details of the structure of the prothallia with good illustrations, which anyone who has seen a section of a prothallium under the microscope would easily recognise as true representations, notably the figure showing the archegonium. The evidence adduced was, I consider, conclusively against Mr. Eadon's previously advanced opinions. The subject is an important one for Fern-growers, but I think from personal experience that there are a large number of gardeners and amateur plant cultivators who really do not understand the true structure of Ferns. As Mr. Castle justly remarks, even Linnaeus himself had a strong idea that there must be a union of sexes to produce new individuals from the term Cryptogams; but, thanks to our enthusiastic investigators, the matter is no longer hidden, hence the best term for them is "acotyledons." I hope Mr. Eadon will search and find out the true structure of Ferns, and thus add practical scientific to his practical cultural knowledge.—A FERN GROWER.

A FEW weeks ago Mr. Eadon wrote about the reproduction of Ferns, and gave as his opinion that Ferns had the inherent power to reproduce their species without sexual fertilisation, and along with his remarks coupled the opinions of several eminent Fern-growers. Mr. Eadon's letters brought an article from Mr. Lewis Castle, in which that gentleman discoursed learnedly upon the fertilisation of these plants in their

prothallium state. Mr. Castle undoubtedly has given great attention to Ferns; but although many people will accept the theory of fertilisation taking place in the prothallia, yet there are persons who will not hastily accept that opinion. In the spore cases there appear under a microscope two kinds of grains separate from each other. There are brown grains which lie in lines like short strings of beads, and pearly white grains lying in no special order in the cells. I have not been in a position to observe whether these brown and white grains influence each other in any way or the plants resulting from them.

There are other remarkable ways of bringing Ferns into existence besides by spore germination. There are Ferns that produce young plants on their fronds. Again, in some species, more particularly in the *Lastrea Filix-mas* family, after the upper portion of the fronds have died there remains a little life at their bases; often a number of these old frond stumps swell and send forth warts, from which issue roots and fronds and soon become separate plants. There is another strange way that Ferns propagate their species. I have seen in a few instances when Ferns have lived their term of days and are about to decay, that they produce from their roots and around their old crowns a large number of bulbs; from these bulbs I have raised plants true to their parent; and a friend of mine had an old *Scolopendrium* var. *crispum* which produced bulbs, and from them he raised over one hundred fine plants of that handsome Fern. From the foregoing observations Ferns seem to have an inherent power of forcing from themselves several kinds of excrescences that are endowed with the power of growing into plants. The generative causes of these growths are difficult to find, but I have no doubt in the course of time they will be found and their working understood.—G. SMITH, *Kendal*.

IVY IN AMSTERDAM.

THE festoons of Ivy bordering some of the principal walks in the Amsterdam Zoological Gardens are most effective, and require only a little time and patience to carry out. Small *Acacia* trees (*Robinia inermis*) are planted at intervals of about 12 or 15 feet on each side of the walk, and about 3 feet from the edge of the grass. Ivy is then planted midway between the trees and trained along strands of wire, which are fastened to the trees about 7 or 8 feet from the ground. These strands form great loops or festoons, dipping down to the ground in the middle, where the Ivy is planted. The wire is quite concealed by the Ivy, which resembles a gigantic wreath. Pink, crimson, and white China Roses are often planted along with the Ivy and trained with it. The pale green plumes of the *Robinias*, the dark green wreaths of Ivy, and the vivid green of the beautifully kept grass are most harmonious. *Acacias* (*Robinias*) perhaps might not grow so well in other parts of Britain; but instead of them could we not have Rose pillars or posts, round which *Clematis* could be trained, and well cut in? The appearance of such pillars and festoons on the sides of walks would have an unique appearance.—BUSY.

SOWING PEAS—PROTECTION FROM BIRDS.

As the time has now arrived for sowing the general crops of Peas a few remarks on their protection from birds may not be out of place. It is well known to all gardeners that sparrows are very troublesome, often destroying three parts of the young plants when they begin to appear above ground. Wire Pea guards are very good to keep the birds off, but when sowing in large quantities, as for the market, the expense is a very serious item. Coatings of red lead and sprinklings the seed with paraffin make it unpalatable for the birds and vermin; and red, white, and black worsted will often frighten the depredators; or any plan is effectual that will protect the young plants until they are well above the ground, as after that time, and when the sticks are placed to the rows, birds will not trouble them much, except in very cold weather.

A simple plan, although by no means a new one, that I have adopted the last six or seven years is to watch carefully for the Peas germinating, which may be often seen by the ground cracking, or sometimes rising where the rows of seed are sown, and it is at this critical time, just before the young plant makes its appearance, that the mischief is done. To prevent this, and when it is seen that the young plant is germinating, take a flat hoe and draw a little soil to the rows (on a dry day if possible), enough to cover them an inch or more. If the

weather is cold progress in growth will be very slow, and it may be that another drawing of earth to them may be required; but if the weather becomes milder the Peas will soon show themselves in the rows, and the soil, if too much has been drawn round them, may be easily removed lightly with a rake. To destroy mice I have employed the ordinary penny mouse traps, baited with toasted rind of cheese, and a pinch of oat-meal sprinkled inside.

This method has always answered with me; and last year, although a very cold and retarding spring for vegetation, out of thirty quarts sown not a gap was to be seen in any of the rows, although the garden abounds with birds. It has happened that there are rows here and there which the sparrows have attacked, but it has been through neglect in not drawing the earth quite over the seed drill; but in later sowings, when the ground is warmer and the sun has more power, very little trouble will be experienced, for it is generally the early sowings and the cold springs that the birds take advantage of. A good first early Pea I find in *Dickson's First* and *Best*; a first-class second early of excellent quality is *Huntingdonian*; and profitable, although not so good in quality as the one just named, are *Laxton's Supreme*, *Princess Royal*, and *Auvergne*; and two good late Peas I find in *Ne Plus Ultra* and *Veitch's Perfection*.—A. HARDING.

NOTES AND GLEANINGS.

WE learn that Messrs. J. Veitch & Sons hope to exhibit at the BULB SHOW OF THE ROYAL HORTICULTURAL SOCIETY to be held on Tuesday next, March 23rd, a splendid group of *Amarylises*, comprising nearly four hundred plants, the greater number of which are of their own raising. Many *Hyacinths* are also expected, and the meeting will be unusually attractive. The display will be held in the conservatory.

THE ROYAL HORTICULTURAL SOCIETY'S GARDENS AT CHISWICK are essentially useful in their character, yet ornament is combined with usefulness in the trials of the different flowers that are from time to time conducted there. The "severe simplicity" of the gardens appears, however, to be gradually undergoing some modification. The rockery near the large curvilinear viney has proved a great success, and the walk now leading from it to the western boundary of the garden near Mr. Barron's new residence will be rendered more attractive than heretofore. In place of the plantation of Plum trees through which it passed a lawn of some width is being prepared, and three rows of large beds are being formed, in which such hardy plants as *Pyrethrums*, *Phloxes*, *Paeonies*, *Campanulas*, *Delphiniums*, *Antirrhinums*, &c., are to be massed, relieved by choice Conifers and other trees suitable for the position. These beds will form an attractive feature of the garden, and will afford an excellent opportunity for comparing the merits of several named varieties of hardy flowers.

THE novel and distinct Aroid, *ARISEMA SPECIOSUM*, is now flowering in a cool house in the above gardens, and cannot fail to attract the attention of visitors by its singular form and striking colours. The plant is about a foot high, the stem being clearly marbled, and the spathe is very fine, being 3 inches across and sharply pointed, but in this specimen it had not become so elongated as is usual in the species. The colour is a maroon chocolate, with silvery stripes rising from the throat, covering the greater portion of the spathe, and the spadix terminates in curious hair-like appendage that reaches quite to the bottom of the pot. The spathe is much finer and more imposing than that of the plant first exhibited by Mr. Elwea, and in size nearly equals that of a *Richardia*, with which it contrasts effectively. This *Arisea* grows freely in a cool greenhouse, and promises to be useful for decorative purposes.

IN consequence of the extremely wet and cold summer of last year *RHODODENDRONS* in many places have not matured their flower buds. In Mr. McIntosh's unique collection at Duneevan the buds are not so numerous as usual nor so firm; some of them, too, were injured by the sudden and severe frost occurring in November last, yet sufficient flowers will no doubt expand to produce a good display in June. The broad margins of *Crocuses* round all the flower beds have now a most cheerful effect, and after flowering the slender arching foliage of the *Crocuses* forms an appropriate margin to the *Hyacinths* and *Tulips* with which the beds are planted. The *Crocuses* are never removed and they increase yearly, while at the same time they prove no real obstacle in the way of the summer bedding plants.

— AMONG the numerous Orchids now flowering so freely at Messrs. Veitch's nursery, Chelsea, is the lovely and graceful *ANGREXUM CITRATUM*, of which such a fine display has never been seen before in this country. Until now this species has been extremely scarce and expensive, but last year Messrs. Veitch imported a large number of plants, many of which are flowering. In one house there are upwards of forty-eight racemes of flowers expanded, one plant alone bearing fourteen, and on a particularly handsome raceme over a foot in length are no less than forty fully expanded flowers. The plants are growing in baskets and pots suspended from the roof, thus enabling the long pendant racemes of cream-coloured flowers to be seen to the best advantage. The species is a native of Madagascar, whence it was obtained by Messrs. Veitch, in whose nursery the flowers were first produced in 1866.

— THE BORDER COUNTIES FLOWER SHOW, which will be held at Carlisle at the same time as the Royal Agricultural Show, opening on the Tuesday and closing on the Friday, 13th to 16th July, promises to be very extensive. The scale of preparation has already been decided upon. There will be upwards of 1000 feet of marquee and 4000 feet of tabling. The show of Roses in particular is expected to be one of the finest ever held out of London. The principal southern horticulturists have promised to compete. The prizes amount to £400.

— AN experienced cultivator describes *VICOMTESSE HERCART DE THURY* as THE BEST STRAWBERRY FOR FORCING. Amongst several leading kinds of Strawberries which he has been trying to force early this spring none have set and formed their fruit so well as the variety named. This variety also proved the earliest with Mr. Baker at Coombe Cottage, who gathered good and well-coloured fruit this year during the last week in February.

— SIR HENRY THOMPSON has offered to add five guineas to the PRIZES FOR ASPARAGUS offered some time ago by Mr. W. Robinson. It will be remembered that the object of these is the improvement of Asparagus culture in private gardens; also to increase the home supply for our markets, which at the present time are so largely supplied with foreign-grown Asparagus. The first competition will take place next spring at the Bath and West of England Show at Tunbridge Wells, and the exhibitions will be continued during seven years, every year in a different locality. Mr. S. Spalding has also promised five guineas—he wishing this to be given as an extra prize the year the exhibition is held in Kent. The Hon. and Rev. J. T. Boscawen has given an extra prize of five guineas to be competed for at the first competition. Mr. Godefroy-Lebeuf of Argenteuil, near Paris, offers the sum of £10 to be distributed in prizes. Apart from these sums, over one hundred guineas will be given in prizes for the improved culture of this vegetable. A schedule of the prizes will shortly be issued. The coming two months are those in which planting may be done with greatest success.

— AT Redlee, Isleworth, the residence of Mrs. Watson, there is now a remarkably beautiful display of *CINERARIAS* in flower. The able gardener there, Mr. James, has, it is well known, succeeded in obtaining an exceptionally good strain of these showy plants, and the specimens he occasionally exhibits invariably attract considerable attention. Several hundreds of plants occupy the stages in two or three houses and produce a most brilliant and dazzling effect. The colours are very pure and bright, some of the crimson, purple, and rosy pink selfs being particularly beautiful. One variety is of such an intensely deep purple as to appear nearly black, while another approaches very closely to a scarlet. The bicolors are handsome and varied, the outer circle of colour ranging from a narrow band just tipping the florets to a broad band reaching nearly to the eye. The flowers are also very symmetrical, many presenting a perfectly circular outline with fine florets of stout substance, and overlapping each other with great regularity.

— AT Messrs. HAWKINS & BENNETT'S nursery, Twickenham, the *ZONAL PELARGONIUMS* are, among other plants, both well and extensively grown. This nursery is one of those where plants of a few popular kinds are cultivated in great numbers to supply the trade and London markets, and consequently we find the principal objects in view are to economise labour and space as much as is consistent with the production of useful healthy plants. Several long ranges of glass from 120 to 200 feet in length are devoted to Pelargoniums, the varieties chiefly grown being Shah, Vesuvius, Madame Vaucher, Master

Christine, Princess Teck, and Vesta, a semi-double variety of great usefulness, all of which are very floriferous and of good habit. They are grown from autumn and spring-struck cuttings, the latter making good plants for the following spring in 48-size pots. With good soil, abundance of water, a position near the glass, and periodical attention to pinching or "shaping," as it is termed, a strong bushy habit is produced that renders the plants admirably adapted either for bedding or other decorative purposes.

— IN the same nursery *ADIANTUM CUNEATUM* receives a large share of attention with most excellent results. A range of span houses, 170 feet long by 18 feet in width, is entirely occupied by plants of this useful Fern, and it is scarcely possible that they could be in a more healthy or vigorous condition than they are there. They range in size from the diminutive plants just appearing in the spore pans up to enormous specimens more than a yard in diameter, and all appear to be equally thriving. The soil employed consists of peat, loam, a little sand, and a liberal admixture of wood ashes and charcoal, for the production of which all the waste wood and prunings of the trees in the nursery are consumed. Where the older plants have been trimmed they are producing crowds of pale green graceful fronds that give the house an extremely beautiful appearance.

— NEAR the last-mentioned range is one devoted to the culture of *STEPHANOTIS* to afford a supply of flowers. This range is 125 feet long, of the form known as three-quarter span, and the whole of the roof is occupied with *Stephanotis* plants. These are planted in tubs, large pots, or square slate tanks, the latter being so formed that they can, by shifting the nuts and screws, be readily enlarged without disturbing the roots of the plants. There is also a contrivance so that by means of a small pipe communicating with the bottoms of the tubs or tanks water can be supplied to the roots without drenching the whole of the soil, which is more necessary, as a pipe runs immediately below the pots, &c. All the plants are remarkably clean, not an insect of any kind being visible—a point of especial importance in the culture of the *Stephanotis*. In the season very large quantities of flowers are cut daily, but there is always a great demand for them.

— ANOTHER speciality is *LILIES OF THE VALLEY*, which are grown very extensively in frames, chiefly for affording cut flowers. Only a few plants are forced early, the bulk of the stock being grown in beds and covered with frames, the object being to produce a large supply of fine flowers shortly before they are produced by outdoor plants. Hellebores are also grown to some extent, their flowers proving useful early in the year when others are scarce. It is worthy of remark that great care has been exercised in all departments to diminish the labour of carrying water as much as possible. There is a well and a tank which receives all the rain water, from which it is raised by a small force pump to tanks at a sufficient height to give the necessary pressure. From these tanks pipes communicate with all the houses, taps being fixed at intervals, so that the supply of water is ready to hand in all parts.

— WE regret to have to record the death, on the 9th inst., at 15, Brownwood Park, Stoke Newington, of SARAH ELIZABETH, the beloved wife of Shirley Hibberd, in her 57th year.

— REFERRING to the communication of "J. A. W.," on page 175, relative to the HARDINESS OF ROSES, our correspondent "C. P. P." writes as follows:—"I did not mean to say that when Roses are properly protected they are not hardy, but that standards with their heads exposed will not stand severe frosts; but the treatment pursued by 'J. A. W.' is quite what I should approve of."

— AT a general meeting of the *FINSBURY PARK CHEYS-ANTHEMUM SOCIETY*, held on the 8th inst., it was decided that the first exhibition of the Society shall be held on November the 17th and 18th, in the Holloway Hall. It was stated that the Society is making good progress, the number of patrons and subscribers being steadily increasing.

— THE schedule of the *LEEDS HORTICULTURAL SOCIETY'S SHOW*, which will open on June 23rd and continue for three days, contains an additional class for groups of plants arranged for effect, which formed such a fine feature of last year's Exhibition. The prizes in the specimen plant classes are also liberal, and should command a large response. There is also an addition in the fruit classes, of which Yorkshire gardeners are worthy, for last year they staged produce of excellent quality. The managers of the Society are evidently anxious to give every possible inducement to insure an exhibi-

bition worthy of the wealthy and important town in which it is held, and they deserve success.

— ONE of the most distinct and beautiful allies of the common Yew is the New Zealand Spruce, *DACRYDIUM CUPRESSINUM*, which, although it has been in this country more than fifty years, is seldom seen in gardens. It is a handsome plant for the greenhouse and winter garden, and judging by some that we recently saw at Messrs. Osborn's nursery, Fulham, young plants appear to succeed well in pots. The leaves are short and closely set round the long pendulous shoots and branches, which thus appear quite cylindrical. The plant is somewhat difficult to propagate, but the best plan of increasing it is by cuttings inserted in sand under a bellglass. There is a fine specimen in the Winter Garden at Kew, together with the better-known *D. Franklini*, the Huon Pine.

— RELATIVE to the complaints of spurious varieties of SCOTCH CHAMPION POTATOES, Messrs. James Carter & Co. have sent us a sample of tubers from their stores. These we have had cooked, and found them nearly white, floury, yet just sufficiently firm to retain their shape, and of excellent flavour. This is the true variety; the spurious one, as we have proved, being yellow in the flesh and close in texture. A Lincolnshire cultivator, writing to us on this subject, states the true variety is shorter in the haulm than the other, but the tubers of both are alike in appearance when not cooked.

— THOS. OLDHAM, late gardener at "The Heath," Hampstead, N.W., has been appointed gardener to C. Homan, Esq., Friern Church, Finchley, N.

— WE are glad to state that the first balance sheet of the LIVERPOOL HORTICULTURAL ASSOCIATION is a very satisfactory one, representing as it does a balance in hand of nearly £200. This is highly creditable to the Committee of gardeners, and as the Society has influential patronage and good supporters its Exhibition this year may be expected to fully equal the display of August last, which was one of the best provincial displays of the year.

— SLUGS AND SALT.—Now is the time to look out for slugs, which are very numerous. Some time ago I recommended salt as the remedy, and the present is the time to use it. Procure refuse salt and powder the land lightly over, and dig it in where the land is intended to be cropped with Potatoes, &c. Be cautious in the use of it where the land has a crop on it already. It might injure Peas already up, but could be scattered between the rows. Slugs are more numerous after a severe winter than a mild one, so that I expect their onslaught will be terrific again this year.—AMATEUR, *Cirencester*.

ADDER'S-TONGUE FERNS.

OPHIOGLOSSUM vulgatum var. *ambiguum* is, I think, the same as *O. lusitanicum*. Mr. Percival says that *O. lusitanicum* fruits in winter whereas *O. ambiguum* fruits in June, but specimens have been found in full fruit in winter. Some time ago I asked Mr. Curnow respecting its being like *O. lusitanicum*, and he said he believed them to be identical. Dr. Ralfs (an authority on such things) agrees with Mr. Curnow. With respect to its time of fruiting, the difference of situation would most probably account for it. To confirm my remarks I may add the flora of West Cornwall is very similar to that of the Channel Islands. This must also be taken into account. To quote the names of a few plants growing in this district peculiar to the Channel Islands may be of interest to Mr. Percival—*Echium plantagineum*, *Juncus pygmaeus*, *J. capitatus*, *Erica vagans*, and several others which are wanting elsewhere in England. I will send Mr. Percival a plant of the *O. vulgatum* var. *ambiguum* about June next if he sends me his address through the Editors.—W. ROBERTS, *Penzance*.

MR. JAMES PERCIVAL'S note on the Adder's-tongue Ferns (see page 194) was interesting. *Ophioglossum lusitanicum* has quite recently been found in the west of Ireland. *O. palmatum* and *O. reticulatum* are two fine species from the western tropics. *O. pedunculatum* is a pretty little stove species, always fresh and fruitful. I should be very glad to know whence a plant of *O. vulgatum* var. *ambiguum* may be obtained for a botanical collection.—DUBLINENSIS.

IRISES.—No. 5.

As the flowers of the Spanish Irises fade another handsome species takes up the succession, and again renders the borders gay with an almost endless variety of brilliantly tinted and

elegantly marked flowers. This is the well known and greatly admired English Iris of gardens, the *Iris xiphioides* of some botanists, and Baker's *Xiphion latifolium*, the latter being the generally accepted name at the present time. The Spanish Irises were described in the last issue as possessing a remarkable diversity of floral beauty, and all that was said in their favour could be repeated of the English Irises, and even their merits could still be found worthy of remark. Combined with an equal or greater variation in colours there is more robustness of habit, and the tints are brighter. The flowers, owing to the predominance of blue shades, distinct marking, and broad falls having a most attractive and imposing appearance. The varieties are also extremely numerous, seed being freely produced, and when a seedling form exceptionally distinct in character is obtained it is readily increased by offsets from the old bulbs, and a stock can thus be easily procured of any desired form. In consequence of this many named varieties are enumerated in nurserymen's catalogues, forms which have been selected for their beauty as deserving of particular attention, and these are increasing yearly as fresh novelties are observed.

The true type of the species, represented by fig. 31, page 220, usually grows to a height of 2 feet or more, the leaves resembling those of *X. vulgare* in form, but they are somewhat larger, and unlike those of the latter species they do not appear until spring. The flowers are borne on stout peduncles, the latter being sheathed in a broad spathe. The falls are of a slightly circular outline, very broad, and gracefully drooping, the colour near the margin being deep purplish blue fading into light blue, and white in the centre. Down the middle of each fall runs a narrow band of pale yellow, and from this radiate the streaks of rich purple, which become lost in the body colour of the margin, the standards and petaloid stigmas being of a bright reddish purple hue. The variations from this type are very numerous, the colours of falls and standards ranging from pure white through innumerable shades of lavender, lilac, blue, blue-purple, crimson and maroon, splashed, mottled, spotted, and streaked with other tints.

The popular name for this plant, English Iris, is by no means an appropriate one, for the species, like its ally, *X. vulgare*, is really a native of Spain, where it is found on the slopes of the Pyrenees. It was, however, introduced to England some years previously to the Spanish Iris—namely, about 1570. Bulbs were imported hence to Holland, and the Dutch growers believing it to be a native of this country named it the English Iris, to distinguish it from the Spanish Iris. Indeed so general was this opinion, that it is related the great botanist Clusius when he first visited England sought the plant in a wild state, and was greatly surprised to learn that it was only cultivated here. The older botanical name, *Iris xiphioides*, was bestowed upon the plant from its resemblance to *Iris Xiphium*. Gerard mentions it under the name of *Iris bulbosa anglica*, and his quaint description is worth quoting. He calls it the *Onion Fleure de luce*, and proceeds thus—"It hath long narrow blades or leaves, crested, chamfered, or streaked on the back side as it were welted; below somewhat round, opening it self toward the top, yet remaining as it were halfe round, whereby it resembleth an hollow trough or gutter. In the bottom of the hollownesse it tendeth to whitenesse; and among these leaves do rise up a stalk of a cubit high, at the top whereof groweth a faire blew Fleure, not differing in shape from the common Fleure de luce, the which being past there come in the place thereof long thicke cods or seed-vessels wherein is contained yellowish seed of the bignesse of a tare or fetch. The root is round like an Onion, covered over with certaine browne skinned or flmes. Of this kind there are some five or six varieties caused by the various colours of the Fleures."

The culture required for this species is similar to that for other bulbous Irises—namely, a light rich soil in a well drained moderately warm border. The bulbs may be planted in clumps or singly, the former being the better plan, as they produce a brighter effect in numbers. When introduced among other plants in the mixed border their appearance is very beautiful, and indeed many other positions may be found where they will thrive admirably. The sides of walks and drives in the front of low shrubberies and similar situations are all suitable. With regard to the varieties in cultivation it is impossible to particularise all those that have been dignified with names, but a few of the most distinct may be briefly described. *Alba*, as the name implies, is a pure white, and there is also a large-flowered form somewhat similar, but more of a creamy tinge.

Then there are several with a ground colour of white suffused with other shades, such as *Blanche Fleur*, suffused with rose; *Fairy*, spotted with blue; *Lucretia*, tinged with lavender;

Miss Barclay, streaked with crimson; and *Perfection*, spotted with the same colour. Of those in which the falls and standards are differently coloured the following are noteworthy—

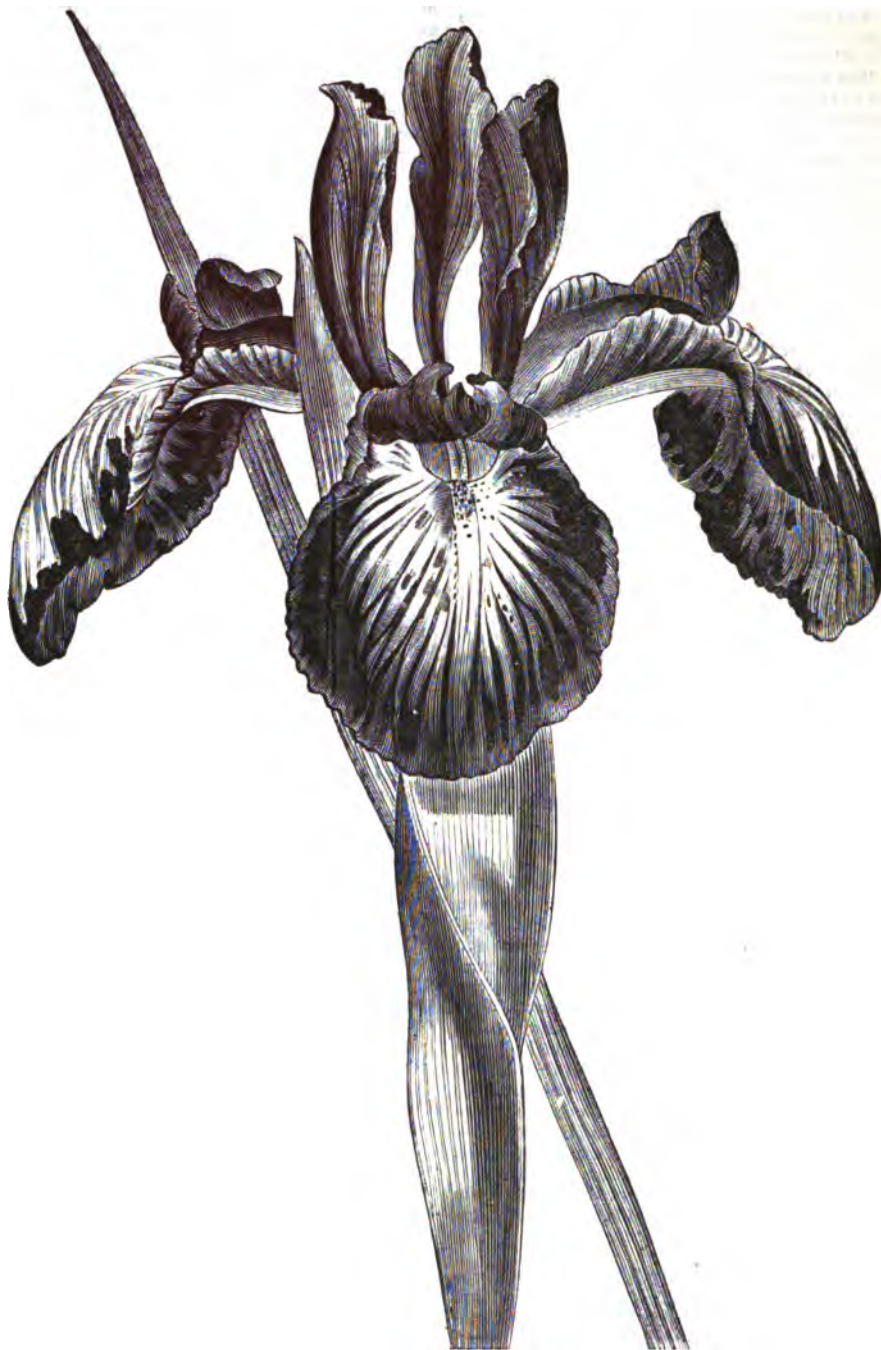


Fig. 81.—XIPHION LATIFOLIUM (IRIS XIPHIOIDES).

L'Enchantresse, falls pale blue, spotted; standards crimson purple. *Lord Byron*, falls lavender; standards crimson and mauve. *Loveliness*, falls white, edged with crimson; standards crimson, marked with white—this is a remarkably handsome

variety. *Lady Ann*, falls blue and white; standards violet purple. *Nestor*, falls lavender, veined with purple; standards feathered with crimson; and many others are equally beautiful. Those noted will be sufficient, however, to indicate the range

of colour and the attractive combinations to be found in the flowers. Such plants as these cannot be too well known or too extensively cultivated; and if they only afford a glow of colour during one month of the year—viz, July, they are still worthy the attention of all who have the means to accommodate them.—L. CASTLE.

AUTUMN PEARS—BEURRÉ SUPERFIN.

In directing attention to meritorious Pears no attempt is made to place them in the order of ripening, or the variety

now figured would have appeared sooner. The engraving faithfully represents a specimen grown last year by that skilful cultivator Mr. Haycock of Barham Court, and is a fine example of a splendid Pear. But good as Beurré Superfin undoubtedly is, it is absent from many gardens where Pears are cultivated. It is true that when a limited number of varieties only can be grown it is often difficult to decide which to exclude from the many good Pears ripening during the autumn; but the Pear under notice ought not to be lightly passed over, for it is one of the most distinct, buttery, delicately flavoured, and delicious fruits of its season. The tree is moreover a remarkably free and

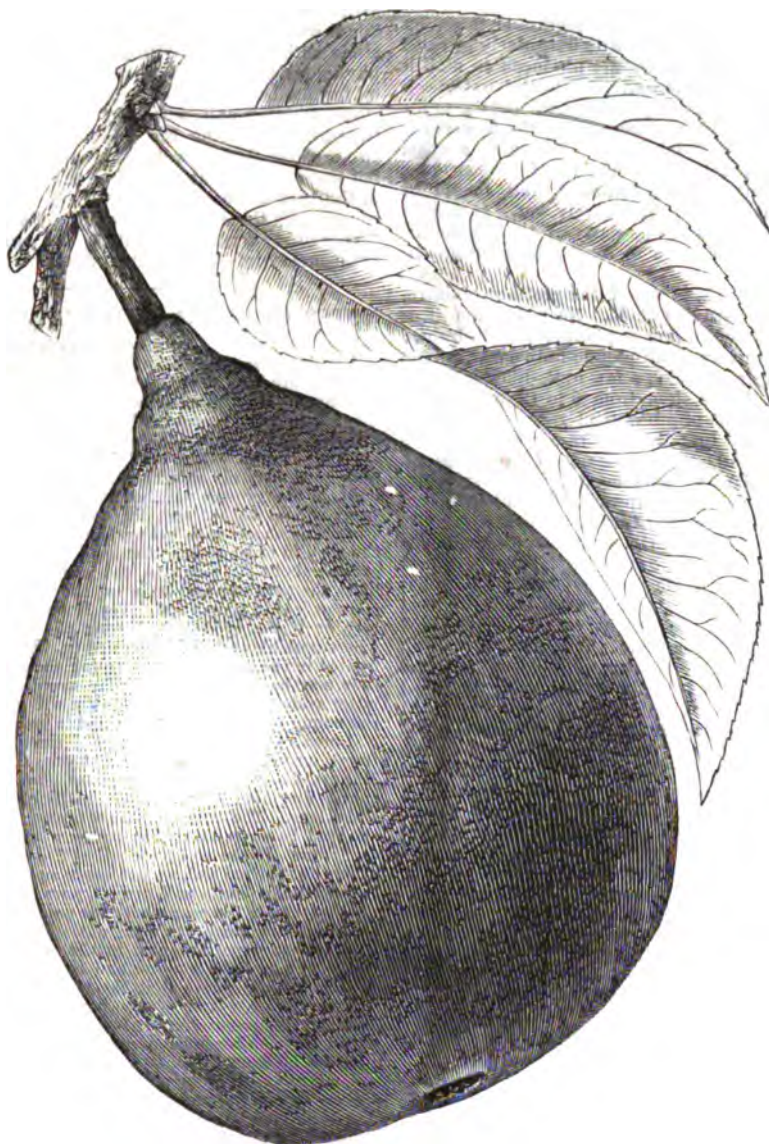


Fig. 52.—BEURRÉ SUPERFIN.

healthy grower, and succeeds well over a wide district of the country; it is hardy and prolific, forms a handsome pyramid, a fine espalier, and a good standard in sheltered positions. The fruit is described in "The Fruit Manual" as being above medium size, 3 inches wide and a little more high; obovate or turbinate, somewhat uneven and bossed on its surface. Skin thin, considerably covered with patches of cinnamon-coloured russet; on the shaded side the ground colour is greenish yellow, which becomes lemon yellow at maturity, and covered with small patches and veins of russet. Eye very small and closed, with stiff, incurved, tooth-like segments, and set in a deep, round, and uneven basin. Stalk

over an inch long, fleshy at the base, and united to the fruit by fleshy folds. Flesh yellowish white, fine-grained, buttery, and melting; very juicy, brisk, and sweet, with a delicate and agreeable perfume. It was raised at Angers by M. Goubault in 1837, and it first bore fruit in 1844, and is commended to cultivators for its many excellent qualities; or if it is unworthy in any respect, we shall be glad to know in what manner and under what conditions.

CONVOLVULUS CNEBORUM.—This very beautiful evergreen shrub has been flourishing out of doors in Cornwall through the winters of 1878 and 1879, and is now in full flower at

St. Michael's Mount near Penseance. The flowers are large, with a scarlet stripe in the middle of each petal; the leaves are downy; height 3 feet. St. Michael's Mount is, I believe, the only place in England where this is grown out of doors, it being usually kept in the greenhouse. It is very remarkable that such a lovely plant is so rarely met with, and after searching for it in many catalogues I failed to see it mentioned. Sea air is almost indispensable for its well-being. It is propagated by cuttings.—W. ROBERTS, *Penseance*.

CHOICE HARDY PLANTS.

Begonia octopetala.—This is a hardy species in the south of England, belonging to the tuberous-rooted section of Begonias. It produces large round-cordate leaves with irregularly serrated margins and very hairy. The flowers are produced in umbels on slender peduncles, white internally, while the outside is delicate carmine; they have usually eight equal petals, as the specific name implies, of good substance, while the flowers are about 2 inches across when well developed. It requires a warm position on the rockery, planted in a mixture of fibrous loam, leaf soil, and sand, with perfect drainage, and should be covered with glass if the winter is excessively wet. It may be increased by striking the cuttings as early as possible in the year, so as to give them a chance to form tubers before the foliage dies down.

Calopogon pulchellus.—This is one of the prettiest of introduced North American hardy Orchids. Near London it is perfectly hardy either grown in pots or planted in well-drained shady positions. It has a very small pseudo-bulb usually about the size of a horse bean, from which a few grass-like leaves are sent up, and a slender flower stem from 6 to 12 inches high, bearing three or more flowers of a beautiful rosy purple colour with a curious little crested lip; the flowers are about 1½ inch across. It delights in peat and sand, but is not readily increased. It is a very interesting plant as showing the normal structure of Orchids, as the lip is pointing upwards instead of downwards, which is the result of the twisting in the ovary.

Aquilegia chrysantha.—This North American Columbine is one of the best in the genus. It grows very freely in almost any soil and situation. In warm borders with light soil it thrives wonderfully. It forms strong masses, and produces stems which are covered with the bright yellow long-spurred flowers, which last a considerable time. It deserves a place in every herbaceous collection of perennials. It is easily increased by division of the roots or by seeds, the former being the surest method.

Opuntia Rafinesquiana.—This is one of the few Cacti which are perfectly hardy in this country, or at any rate in the south of England. It is a singular-looking and distinct plant; the branches are large and flattened, smooth, of a dark green colour, from the edges of which the numerous bright yellow flowers are produced. It will flourish in a well-drained position in the border or on the rockery where it will receive good drainage, and it will stand exposure. We have found it grow well in loam, sand, and broken bricks. It may be increased by removing the joints and placing them in pots of sand in a frame.

Oenothera lamarckiana.—This is one of the best Evening Primroses. It has a spreading and prostrate habit, with leaves runcinate or irregularly lobed, very similar to those of a Dandelion, as its specific name implies. The flowers are 3 or 4 inches across, solitary, with long tubes of a pure white colour when first expanded, changing to reddish pink, succeeded by the curious four-angled fruit close down to the root. It is easily obtained from seed, which is the best way to increase the stock. It is a very showy plant, and does well in the open border.

Erigeron glaucum.—This is a really showy Composite, of which there are but few compared with the immense number of species included in that family. The plant grows about 9 inches high, with oblong leaves of a light green colour arranged in rosettes, and rather glaucous. The capitula are about 2 inches across, with the outer or ray florets rich violet blue, and the central florets yellow, forming when in a mass a very decorative plant. It is well adapted for the open border in a warm position with rather light soil, and may be increased by dividing the roots or from seeds.—R.

FRAGRANT AMARYLLIS.—I recently noticed a fragrant seedling Amaryllis, the odour of which was at first attributed to *Gardenia citriodora* and *Franciscea calycina* major that were near it. The fragrance, however, was distinct from both, and

similar to the Belladonna Lily. Its parentage I do not know, but I have crossed many with that variety, also *Vallota*, with but little success. The flower is evidently of the vittata section, creamy white, double striped on each petal, and much feathered with red, and is green at the base inside. The petals are very acute, the flower about 7 inches long. Its only peculiarity is the scent.—G. A.

FILMY FERNS.

I ENCLOSE a specimen of *Hymenophyllum Wilsoni*, which I have grown in my fernery for eighteen months without any artificial heat whatever. For three months of last winter the house was never entered. I grow it in a moderate close case along with *Hymenophyllum tunbridgense* and *Todea hymenophylloides* and *Trichomanes radicans*. My plan of growth is to form a base of about 8 inches of broken bricks and sandstone, with a small portion of turfy loam just scattered over the surface. During the summer months I syringe the Ferns two or three times a week as occasion may require, but I have not watered them at all during the winter, and they are now in the best of health. I have them in a place about a yard square with three brick walls and a glass front and top, in the corner of my fernery, so that the sun can never shine upon the little enclosure.—JAMES PEROTVAL.

NOTES ON VILLA AND SUBURBAN GARDENING.

FLOWER GARDEN.

Pruning Roses.—Those unpruned in the southern counties are fast starting into growth, and therefore pruning should be delayed no longer. Many gardeners as well as amateurs are apt to prune much too lightly, especially when the growth is weak. Close pruning, however, in the case of vigorous growers induces still stronger growth with a small display of bloom; these, then, should only be moderately shortened, but the weak growers must be cut hard, or the growth will become still weaker. In either case all spray should be cut out, the centre thinned out freely, and all straggling shoots with old wood attached cut-in to a shoot nearest the stem in order to keep the head balanced and vigorous. Young growth about the size of a lead pencil may be cut to about three buds, the terminal bud to be on the outer side, and other shoots more or less in proportion. Tea Roses may be treated in the same way, or if the growth be strong the old wood may be cut out where possible and the young tied in. Dwarf Roses are frequently treated in the same way, the young shoots being perged down, or they may be pruned in a similar manner to the standards. The latter system this season probably will give the best results, as the young growth of those trained is much too soft and pithy.

Annuals.—The present is a good time for sowing many of the freest growing, notably *Mignonette*, *Candytuft*, *Echscholtzia*, *Malope*, *Convolvulus*, *Sweet Peas*, *Poppies*, *Nemophila*, *Larkspurs*, *Virginian Stocks*, *Love-lies-Bleeding*, *Godetias*, *Vicarias*, and others. The soil should have previously been well worked, and the seed be sown thinly in patches where the plants are required to flower. If the soil be at all stiff it is advisable to cover with other light-sifted soil, as the seeds must not be heavily covered. A few sturdy plants will give a more lasting display of a better quality than is the case where the seeds are sown thickly and the seedlings not freely thinned out. *Mignonette* ought really to play a more important part in the flower garden than it usually does. Where *Pelargoniums* and other bedding plants are scarce it becomes imperative that the most be made of them. A large bed sown thinly and evenly now with *Mignonette*, and among this at bedding-out time a few *Pelargoniums* dotted about, and edged with either *Lobelia speciosa*, or *Nemophila insignis* if the position be a cool one, is a very pleasing arrangement; so also are mixtures of *Mignonette* and *Verbena venosa* or other *Verbenas*, *Mignonette* and *Godetia* *Lady Albemarle*, and *Mignonette* and blue *Heliotrope*, or lavender *Ageratum*. If the *Godetia* is grown with the *Mignonette* it will continue in bloom much longer if sown under glass and transplanted.

MUSHROOM BEDS.

Where sufficient manure has been collected and prepared as previously advised it should be now made into a bed. As before stated, no house is necessary for Mushrooms, as they may be successfully grown in a variety of positions selected according to local circumstances. The shelter of an outhouse or shed is very suitable, and failing these the bed may be made in a pit, box, frame, or in the open, providing they are properly covered to ward off heavy rains, and which will also help to preserve an equable temperature. If made in a sheltered place the bed may be flat and about 18 inches deep, but in the open it is advisable to have a raised centre 2 feet in height, and the sides sloping to about 1 foot in depth at the front, boards supported with stakes being used to keep the bed together. In either instance the manure should be placed in layers, and either beaten or well

trodden as the process goes on, as the bed must be quite solid. When completed insert a trial stick, which in all probability in a few days will be found too hot to hold comfortably in the hand; wait until this heat is on the decline, and then insert the spawn. The holes may be made with a dibber, and should be about 2 inches deep and the same in diameter, disposed triangularly, and 6 inches apart each way. Place in each a piece of spawn of the size of a hen's egg, level the manure and well beat down. If spawned at the right time the bed may be covered at once with soil, but beginners will do well to wait eight or nine days, when all danger of overheating is past. Two inches of sifted soil may be placed on, giving the preference to fresh loam taken from immediately below the turf, levelling it and beating it down with the back of the spade. A covering of hay or litter will prevent excessive dryness, darken the bed, and preserve the heat. Water is seldom required till a crop has been taken, and when applied should be slightly warm, using either a syringe or fine rose watering pot. If the bed is well made and the spawn good, Mushrooms may be gathered from three weeks to a month from the time of spawning.

WORK FOR THE WEEK.

KITCHEN GARDEN.

PART of the stock of Horseradish should be lifted by trenching and clearing it of all waste pieces of roots, selecting that fit for use, which should be laid in at the back of a north wall. The thin roots 18 inches or more in length should be retained for transplanting, and after the ground intended for it has been manured and trenched plant the roots 8 inches apart in rows 18 inches asunder. The ground intended for Seakale, Rhubarb, and Globe Artichokes must be prepared, so that planting can be done by the early part of next month. Asparagus when subjected to good treatment does not often require renewal, but in places where some of the plants are annually destroyed in forcing a fresh plantation will be necessary to maintain a supply. The main object in cultivating this vegetable is to obtain large clumps of healthy roots and crowns. To secure this result, instead of planting as closely as formerly the distance between the plants must be increased, which will afford more satisfactory results both as regards the superiority of the roots for forcing and the quality of the heads for use. Two rows of roots should be planted in a bed 4 feet wide, each row being 1 foot from the edge of the bed, and allowing an alley 2 feet wide between the beds. Before planting remove the soil entirely 1 foot wide and about 8 inches deep, so that the roots may be laid out straight on a flat surface, placing them 2 feet apart. For permanent beds the roots may be planted 2 to 3 feet apart in rows 3 to 4 feet asunder. Plants two years old are suitable; if older they do not bear planting well. If the ground has been well manured and trenched planting may be proceeded with in favourable weather. Asparagus seed may be sown in drills about 18 inches apart. Sowing the seed of Onions, Leeks, Parsnips, and early Carrots should be completed without delay. If these are sown in beds a row of Lettuce seed may be sown in the alley. Sow some of the early varieties of Peas at the same time as the first of the main crop, so as to guard against a break in the succession. A row of Spinach may be sown between the rows of Peas, and Radishes may be sown in a similar manner; both are off before the Peas have grown enough to injure them. Cauliflower plants from handlights or frames should now be planted in the spaces between Asparagus beds, or 2 feet apart every way in an open situation. Fill up all vacancies among Cabbages and Lettuces; reserve plants from the August sowing if planted in breadths now will succeed the autumn-planted crops. Employ the hoe freely between the rows of all growing crops whenever the weather is favourable. Broccoli coming into use should have the larger outer leaves broken over the heads to protect them from frosts. The general planting of early varieties of Potatoes should be proceeded with. The early and dwarf varieties only should be grown in gardens. Avoid deep planting, and allow plenty of space between the rows.

Forcing Department.—Any unoccupied pits may be planted with French Beans, which are best out of houses after the end of the month, as the heat necessary to mature the permanent crops in the same house encourages red spider; besides, the crops of Beans are more plentiful from plants in beds than in pots after this time. The earliest Tomatoes will now be strong in 7 or 8-inch pots, in which such varieties as Vick's Criterion and Orangefield may be allowed to fruit, training with single stems, pinching out all laterals, and supplying with liquid manure. It is essential that they have plenty of light and a temperature by artificial means of 55° to 65°; or they may be planted out in borders or transferred to 12-inch pots for fruiting, employing a compost of three parts turfy loam and one part well-decomposed manure, potting firmly, and placed in as favourable a position for light as possible in the temperature above indicated. Plants from more recent sowing should when large enough be potted off singly in 8-inch pots, and kept growing steadily on, so as to have strong plants in 7 or 8-inch pots by the middle of May, when they should be gradually hardened off for outdoor planting. If seed is not already sown for

raising plants for this purpose it should be done without delay. Shift Capsicums into larger pots when necessary; 7 or 8-inch pots are sufficiently large. The principal sowing of Capsicums should now be made. Prick off Celery intended for early crops as the plants become fit, either in boxes or frames. Cauliflowers, Brussels Sprouts, and Lettuces sown early should be encouraged by gentle watering, hardening well off by admitting air freely in favourable weather preparatory to planting out. Water Potatoes in frames or pits as necessary, also Carrots, thinning the latter to about 4 inches apart. Weak liquid manure may be applied to both in a tepid state, but it tends to make the Potatoes more watery, and so does water if continued much after the tubers are about half swelled, a rather dry condition of the soil being essential at that stage to insure quality. Do not earth-up more than to prevent the tubers becoming green. Introduce more roots of Mint and Tarragon to heat, sowing Mustard and Cress in proportion to the demand. More roots of Rhubarb and Seakale must be brought into the Mushroom house unless provision is made for advancing those outdoors; also fresh roots of Asparagus can be planted in frames over fermenting beds.

FRUIT HOUSES.

Peaches and Nectarines.—Do not hurry the fruit in the earliest house during the stoning process, but continue the temperature and careful attention advised in our last calendar. Tie the shoots to the trellis as they advance, and regulate the growths for future bearing so as not to have them too crowded, as by giving the shoots plenty of room the fruit is better exposed to sun and air for colouring, and the wood for another year is stouter and better ripened. Shoots disposed to grow more than 14 inches may have the points pinched out, these remarks not applying to extensions. When the stoning process is over, which must be ascertained by testing a few fruits on each tree with a knife, the crop will require to be regulated for the swelling period. Very vigorous trees may be allowed to carry a few more than those that are weakly, but on no account unnecessarily tax the trees with more fruit than can well be brought to maturity without prejudicing future crops. Weakly trees should be supplied with liquid manure, and the inside border in any case must be kept properly watered, mulching the surface with short partially decayed manure. This will secure more uniform moisture, and the fruit will swell to a good size. The temperature may be increased to 65° or 70°, and in the day from 70° to 75°, and 85° or 90° by sun heat, ventilating from 75°, and closing early. In the succession houses the thinning of the fruit where too thickly set will require attention, removing those which are badly placed. The shoots must be tied in as they advance, being careful not to allow more shoots to grow than can be fully exposed to light and air, cutting away any gross growths, the object being to secure an equality of growth in every part of the trees. Disbudding must not be neglected, commencing early and doing it gradually. The show of blossom in the late houses is very good; draw the hand the reverse way of the growth, so as to remove the blossom on the under or back side of the trellis. If aphides appear fumigate moderately, and syringe daily except when in flower. Mildew sometimes appears, attacking alike the fruit and foliage, to which apply flowers of sulphur on its first appearance. See that there is no deficiency of moisture in any of the inside borders.

Cherry House.—When the fruit has set syringing should be practised once every day, and twice when the weather is bright. Fire heat will only be necessary to prevent the temperature from falling below 50° by day and 40° at night. Ventilate freely above 50°, as free ventilation now and through the stoning process is essential to success. Be diligent in searching for grubs. Examine the whole of the foliage carefully. Aphides must be checked upon their first appearance by fumigation, having the leaves of the trees dry. There must not be any neglect in watering trees in pots, and those planted out must not suffer through deficient moisture at the roots. The shoots of Plum trees will require stopping when about 4 inches in length, and those not wanted remove altogether.

Figs.—On the earliest forced trees in pots the fruit will now be rapidly swelling; the trees will require regular supplies of water at the roots, and should be syringed twice a day until the ripening period arrives. The night temperature should be kept at 60° to 65°, and 75° to 80° by day with sun heat, closing at 80°, and when the weather is favourable admit air freely. In the house where the trees are planted out the tying-in and regulation of the terminal shoots and stopping the spurs at the fifth leaf will be necessary. Keep the house moist by daily syringings and damping at closing time. If it be desired to increase the stock cuttings may now be inserted, selecting shoots about 6 inches long, taking them off with a heel or portion of last year's wood attached; they strike readily in bottom heat.

Pines.—Attention must be given to the recently potted suckers or plants, as the vigorous young roots are very tender, and must not be subjected to a stronger bottom heat than 85° when the roots reach the sides of the pots. Water these plants regularly, continuing the treatment as advised in our last calendar. The plants will make roots rapidly, hence the materials for potting should be prepared so that there may not be any delay in shifting

as soon as the pots are well filled with roots, as Pines require to be grown on without check. Do not allow the suckers to become rootbound and dry, but when fairly well rooted pot them at once, employing good fibrous loam rammed firmly round the balls; water with tepid water at once, and plunge the pots in a bed with a temperature of 90° to 95°. Treat successional stock as before advised. The temperature for fruiting plants should be kept at 65° to 70° at night and 5° to 10° more in the daytime, with 80° to 90° with sun heat, closing the house with sun heat at 85°, well damping all available surfaces in the house.

Strawberries in Pots.—Our best fruits this year are as usual from the variety *La Grosse Sucrée*, one fruit of which weighed more than three of *Vicomtesse Hericart de Thury*, but the fruit are not so numerous, though the weight per plant is not materially different. *Sir Harry* and *President* are also good. For jellies no fruit is prettier than *Vicomtesse Hericart de Thury*, and when well thinned the fruit is of fair size, otherwise it is small. All plants will now be in position for advancement by gentle forcing, or if not they should be brought under glass without further delay. Some may be advanced by placing them in houses where there is gentle heat, and others may be placed in cool houses where they will come on gradually. In all cases it is necessary to examine the drainage, removing any moss or other matter from the surface of the soil, and wash the pots, surfacing with horse droppings rubbed through the hands, which prevents the soil from leaving the sides of the pots and encouraging root-action at the surface. Until the trusses are showing it is well if the temperature does not exceed 50° by artificial means, and between that and the flowering and setting 55° is safe, advancing to 65° by day with free ventilation. The Strawberry also likes plenty of light until the fruits are set, but afterwards they are apt to become dried, hence they swell best in positions where the sun's rays are not so strong at midday. After the fruit is set and swelling a temperature of 60° to 65° at night, and 70° to 75° by day with an advance from sun heat is necessary, affording copious supplies of water and liquid manure until the fruit shows indications of ripening, when a somewhat drier and more airy atmosphere with diminished supplies of moisture at the roots will afford large well-swelled fruit of good flavour. The thinning of the fruit must be attended to as soon as the setting is completed, removing the smallest and deformed fruit; and on no account must there be insufficient water at the roots during the swelling, but during flowering the soil must be kept moist, avoiding extreme either way. The chief object in Strawberry forcing is to secure an early and unbroken supply until those in the open ground come in, and this where there is a number of houses started at intervals will admit of its being done without much trouble or change of plants, whilst in others some tact will be necessary to meet the requirements.

PLANT HOUSES.

Stove.—The temperature should now range from 65° to 70° at night, 5° less when the nights are cold, and 70° to 75° by day by artificial means, commencing ventilating at the latter, allowing an advance from sun heat to 85°, closing at 80° or 85°. The house and plants should be syringed in the morning if the day is likely to be fine; if not, only damp the surfaces available for the purpose, and syringe again at from two to three o'clock in the afternoon, damping the paths again before nightfall. Syringing the plants should always be done early enough to allow of the foliage becoming dry before dark, as too much moisture at night has a weakening tendency, and wet on the tender leaves is liable to result in chill, especially if the temperature fall suddenly during the night. Air should be carefully admitted for some time to come. *Amaryllises* will be throwing up their flower scapes without much heat. The flowers are grand, and these bulbs are not nearly so generally cultivated as they deserve. In an ordinary stove they grow well, requiring plenty of light and moisture during growth, and being never allowed to become dry. *Hoyas* require to be grown where they will not receive so much moisture as other plants, and so soon as the flowers push from the spurs cease syringing or the flowers will fall. *Begonias*, both flowering and ornamental-leaved forms, are very useful. Of the perpetual-flowering species the delicate rose of *B. manicata* is very effective at this season. *B. insignis*, *B. weltoniensis*, *B. Saundersii*, *B. fuchsoides*, *B. Ingrami*, *B. nitida odorata* and the variety *Moonlight* are valuable, flowering over a greater part of the year, and are very serviceable in winter. The ornamental-foliage section include many very beautiful plants. *B. metallica* is very effective for table decoration. The plants should be grown in 6 or 7-inch pots, and are very useful for many purposes. *Vinca oculata* and *V. rosea* are good for summer and autumn decoration, and should be grown near to the glass in the coolest part of the stove. Plants in 4 or 6-inch pots should be shifted into pots two sizes larger, employing turfy loam and a third leaf soil. *Echmeas*, *Billbergias*, *Tillandsias*, and other similar plants should be placed in light positions. *Allamandas* and *Bougainvilleas* frequently have the shoots tied down, which is fatal to their flowering well: it ought to be deferred until the flowers are set. These remarks apply to those that are trained to balloon or other trellises, but those on roofs should be trained-in as they advance. Similar remarks apply to *Stephanotises* and *Dipladenias*.

Gloxinias may now be moved into larger pots, and to keep the plants stout place them near the glass. *Franciscas* are now finely in flower, especially *F. Lindenii* and *F. calycina major*: the latter is by far the best, and should not be disturbed at the roots until the flowering is past. *Epiphyllums* should be potted if not already done, employing good loam with a fourth of old manure and a little sand. They do not require large pots, but like fresh soil and plenty of light. *Poinsettias* that have been kept rather dry for a time after flowering should be cut down to two or three eyes; keep them close to the glass, and when they have started they may be shaken out and repotted. Those intended to furnish cuttings should be similarly treated, but not cut quite so closely; and when the shoots are 3 or 4 inches long they may be taken off with a heel and inserted in sandy soil in gentle heat, but with not over-much moisture. *Euphorbia jacquiniiflora* may be treated similarly. *Centropogons* should be kept rather dry for a short time, and then be cut in, leaving a few eyes at the base of the shoots, and when the growths are a little advanced shake out the plants and repot them. *Conocliniums* are very effective from their large heads of *Ageratum*-like flowers, and are deserving of more attention, being easily grown. Cuttings strike freely in gentle heat, and, grown-on in plenty of light, bloom freely the following spring. *Pancratiums* starting into growth should have larger pots if necessary without disturbing the balls, only removing the crocks, encouraging growth with plenty of moisture, assigning them a light position. They rival the *Eucharis* in beauty and fragrance. The latter whilst in growth feed with liquid manure, and increase the size of the pots in preference to dividing the plants.

Greenhouse.—Potting young hardwooded plants must be attended to without delay, commencing with those most active at the roots, such as *Boronia*s, *Correas*, *Epacris*es, *Gompholobium*s, *Lechenaultias*, and *Pimeleas*. Good fibrous peat is the most suitable material, naturally containing but little sand. To the peat should be added about a sixth of silver sand. It is necessary to have the ball of each plant thoroughly moistened before potting. There must be no attempt at reducing or disentangling the roots, and any plants much rootbound must only have a small shift now and again later when the roots have entered the fresh compost. Plants in a healthy state at the roots should have a shift of about 3 inches, and ram the compost quite as firm as the ball, not raising the balls so much in the pots as not to leave room for watering efficiently. The surface of the soil in an 8 or 9-inch pot will require to be 1 to 1½ inch below the rim. Large plants if rootbound are more safely shifted now than after they have flowered, and if carefully performed it will not interfere with the flowering. Place them after potting on a stage that can be kept moist, and in a part of the house that can be kept rather close for a time. Young plants which are desired to grow on as quickly as possible should have the flowers pinched out, and to ensure the foundation of good specimens bring the strongest shoots down in a horizontal position and there secure them. *Camellias* intended for late flowering should be removed to a house with a north aspect. Plants in flower of these from the present time forward ought to be shaded from bright sun, which not only takes the colour out of the blooms but shortens their duration. Such late varieties as *candissima*, *Beali*, &c., often cast their buds at this time owing to the atmosphere being too much dried by the solar rays, which should be counteracted by shade or a liberal supply of moisture in the atmosphere. Plants as they cease blooming should be thoroughly cleaned, as after they commence growth it is difficult to do so without injuring the tender foliage. Plants that flowered early in the autumn or winter will be growing, and should be encouraged by a temperature of about 55° at night, 10° to 15° rise by day, be shaded from bright sun, and have plenty of moisture both at the roots and in the atmosphere. Any straggling plants or with over-luxuriant shoots should be cut back to keep the plants shapely. *Calceolarias* must be potted as required into 6 or 7-inch pots, but any vigorous plants not showing flower may be shifted into 8 or 10-inch pots, assisting the plants with liquid manure. *Pelargoniums* as they fill the pots with roots will require more water, for if allowed to become too dry the leaves will suffer. The fancy varieties will require careful watering. Keep them near the glass and well tied out. Fumigate upon the first appearance of aphides. *Liliums* beginning to grow must have plenty of light. Sow *Cineraria* seed for autumn or early winter flowering.

Orchids.—Repot *Anguloas*, except such as throw up the flower buds with the young breaks, as *A. Ruckeri*, *uniflora*, and *Clowettii*, which should not be disturbed until after flowering, employing fibrous peat, half filling the pots with crocks, over which should be placed a layer of sphagnum, filling up with peat and potsherds, keeping the bulbs a little elevated above the top of the pots. *Cynochos*, *Catasetums*, and *Mormodes* should be potted in peat and sphagnum, half filling the pots with drainage. *Thunias* must now be shaken out and repotted, a little more than half filling the pots with drainage, over which place a layer of fibrous loam, and fill up with peat and sphagnum. These with the three previously named require a strong heat and plenty of light when growing, watering sparingly for a few weeks, or until well rooted, then water abundantly. Repot *Sobralias* in a compost of equal parts

loam and peat with some crocks and a little sand, all well mixed together. *Peristeria elata* should be given growing treatment. *Calanthe veratrifolia* and *C. Masuca* may be watered copiously with weak liquid manure, also *Cypripedium* and *Cymbidium* will be the better for a little weak liquid manure if the pots are filled with roots, and any plants of *Cymbidium* may if necessary be repotted, employing the compost advised for *Calanthes*. *Pleione*s as they go out of flower should be potted in shallow pans in peat and sphagnum. *Odontoglossums*, *Masdevallias*, and *Oncidiums* should be potted as soon as the flowering is past. Plants with plenty of root space will only require top-dressing. Yellow thrips frequently infest *Odontoglossums* and *Masdevallias*, which should be frequently sponged, or tobacco smoke blown into the growths will destroy the insects. *Disa grandiflora* if growing strongly may be placed in saucers with an inch of water in them, and the soil kept constantly moist. Should any require larger pots shift them now, employing lumpy peat and a little sphagnum and some sand, the drainage being made extra efficient. The temperature of the East India house should now be 65° at night, 75° by day, and 5° to 10° more from sun heat; Mexican house, 60° at night and 70° by day; cool house, 50° at night and 55° to 60° by day. A good moisture must be maintained in the East India house, keeping the evaporation troughs filled with water, the floors and benches damped morning and evening, and syringing lightly after a bright day when the heat begins to wane. Plants on blocks will require frequent syringings, the water employed being a few degrees warmer than the house. But little ventilation will be required at present except on hot days. Do not keep a completely saturated atmosphere, but allow the floors to become dry once a day, over-moisture causing spot, especially when accompanied by a low temperature. Plants growing freely will require a good supply of water at the roots. Top-dress without delay *Aërides*, *Angraecums*, *Phalænopses*, *Necolabiums*, &c., employing fresh sphagnum, as with the increased daylight their roots are pushing, the points of which are easily injured.

TRADE CATALOGUES RECEIVED.

Harrison & Sons, Leicester.—List of Farm Seeds.
William Paul, Paisley.—Catalogue of Miscellaneous Plants.
Samuel Yates, 16 and 18, Old Millgate, Manchester.—Catalogue of Vegetable and Flower Seeds.

TO CORRESPONDENTS.

. All correspondence should be directed either to "The Editors" or to "The Publisher." Letters addressed to Mr. Johnson or Dr. Hogg often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense. Correspondents should not mix up on the same sheet questions relating to Gardening and those on Poultry and Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

DISRUDDING VINES (*Subscriber*).—Do not remove the buds to which you allude. We will reply more fully in a future issue.

REPAIRING FALING (*Difficulty*).—As you are willing to pay for the repairs, there cannot be any impropriety in your applying to the owner to allow you to have the repairs effected.

LAWN EDGE CLIPPER (*J. McK.*).—Not having tried the implement you name we are not in a position to express an opinion of its merits. Write to the makers for the addresses of those who have employed the machine, and from whom you can obtain practical information relative to it.

FUNGUS ON BEECH TREE (*P. J. B.*).—If you scrub the bole of the tree with a rather strong solution of soft soap and common salt it will, we think, destroy the fungus; or a dressing of paraffin and soap—half and half, to be thoroughly agitated during application—would probably answer equally well. Unless you kill the fungus it will spread all round the stem and seriously injure the tree.

PLANTING GLADIOLUSSES (*New Subscriber*).—The corns recently taken from the ground should be planted without drying them excessively, but as there are signs of decay and roots are not visible you may partially dry them and dress them with powdered charcoal. In planting make the soil quite porous so that the water can pass away freely, and surround the corns with light and very sandy soil. You may plant them at once.

CULTURE OF CALCEOLARIA PUCHERANFOLIA (*O. G. R.*).—The plant succeeds best in a light rich soil composed of loam, leaf soil, and sand, and it should be placed outside during the summer in a cool place where it is shaded from the sun. In autumn remove it to a greenhouse, where it will flower from October during the winter. After flowering keep the plant somewhat drier, and cut-in all straggling growths to firm wood. When it has made fresh growth about half an inch in length remove the plant from the pot, reducing the old soil considerably, and repot in the fresh compost.

WORMS IN FLOWER POT (*Carolus*).—We know of no safer plan than placing a large lump of fresh lime in a pot of water, and then when the water is quite clear, not before, applying it so as to penetrate every portion of the soil; the worms will then come to the surface. When you found that worms were in the soil of the plant you ought to have removed them before potting it, as saturating the soil of a newly-potted hardwood plant is not a desirable practice; still by exercising sound judgment in applying the

water you may succeed in extirpating the worms without injuring the specimen.

BEANS GRUB-EATEN (*A. W.*).—The insect that has caused the injury is the Bean Beetle (*Bruchus granarius*), and if you open the seeds you will find live beetles in them, the same as in those you have sent to us. It would be very unwise to sow the Beans, for even if they germinated and produced a crop you would in all probability be the means of increasing a destructive pest. Such seeds as those sent may germinate, but the cotyledons would be so imperfect that the young plants would probably decay and time and labour would be lost. The best advice we can give you is to burn the Beans at once, and obtain a supply from another source for producing your crops.

CUCUMBER PLANTS DEFECTIVE (*S. C. F.*).—The leaf soil, we think, would not affect the plants in the manner indicated, and the temperature of 68° to 75° is suitable; but we should not employ leaf soil exclusively in raising the plants, as we consider a compost of half sweet decayed tarty loam and half leaf soil preferable. Are you sure there has been no sudden fluctuation of temperature, or that cold water has not been applied to the soil? If the treatment in these respects has been correct we can only account for the defect in the cotyledons either by the seed being very old, or if new, immature. You will find instructions on Cucumber culture in our "Kitchen Garden Manual," which can be had from this office in return for 44d. in postage stamps.

PARTICULOURED HYACINTH (*R. B. B.*).—Hyacinths occasionally produce sportive flowers, or petals of a colour different to that of the variety; but it is not usual for a flower spike to produce "the two colours pink and blue nearly equally divided, and where they join, the flower on the spike to be half blue, half pink, the stem being much darker on the blue side than on the pink." If you preserve the bulb and grow-on the offsets that it produces, and these produce flowers the same as those described, you will be quite justified in regarding your sport as a distinct variety, and can give it any name you please that has not been attached to a variety in commerce. Your system of distributing bulbs amongst the school children of your parish is very commendable, and we are glad to learn your children's spring flower show has proved so successful.

PEACH TREES IN POTS BARREN (*A Constant Reader*).—The absence of bloom on the Peach trees in the unheated house is the result of immature wood. Either the trees are shaded or the growths are permitted to become overcrowded, so that the sun and air are prevented acting freely on the foliage. In your moist climate you must endeavour to produce short-jointed shoots of medium strength, and these so thinly placed that the sun can shine quite through the trees that are grown as bushes. Peach trees in pots plunged in borders often grow too luxuriantly by the roots being allowed to penetrate the soil and so increase from year to year. Mr. Rivers' plan to which you refer is to cut off all the roots close to the pots annually, and his trees are further thinly grown in very light houses where they fruit prodigiously. By adopting the same practice and producing growths of medium strength and maturing them your trees will become fruitful.

ADANTUM CUNEATUM FOR CUTTING (*Novice*).—Healthy plants in 48-size pots produce fronds suitable for cutting, but it is very undesirable to cut such plants closely. If you desire a large supply of fronds we should shift on a number of plants in larger pots, having a reserve of small plants to cut from until the others are strong plants in 10-inch pots, which will give a larger supply of fronds in a given space of staging than will small plants. When Ferns are cut severely they become so much weakened that even such "rest" as you propose giving does not always restore their vigour. You will find it more advantageous to raise young plants from spores annually, and thus have batches of vigorous plants constantly "coming on," than to endeavour to invigorate old plants that have been enervated by close cutting. The lower temperature you name—60° by day and 50° by night—is suitable for the plants which you desire to renovate.

FERNS WITHERED (*A. C. Bungay*).—You have made a mistake by placing the stove and boiler inside the house, for the smoke and the sulphurous fumes escaping cannot fail to injure Ferns and other plants. The house was also overheated, though you think it was not; a temperature of 68° during the winter is 18° to 20° higher than is needed by such Ferns as you have enclosed and *Zonal Pelargoniums*. The apparatus you employ is a good one when rightly placed and judiciously managed. If you must keep the stove inside the house you must adopt measures so that the smoke and other fumes have free exit through the pipe into the flue, and never attempt to raise the temperature by fire heat above 45°; you will then both save fuel and prevent the plants being so seriously injured as the specimens you have sent to us. The groove at the top of the stove should be filled with fine sand before placing on the lid after fuel has been supplied.

PLANTS FOR WINDOWS (*A. B.*).—The district you mention is by no means a favourable one for plants, and there are very few that will succeed there for any length of time. Such plants as *Fuchsias*, *Pelargoniums*, *Chrysanthemums*, the old *Coleus frutescens* and *C. Verschaffeltii* are raised readily from cuttings, but the latter plant will only succeed in windows during the summer, as it requires a moist high temperature in winter. A few small shrubs would also be suitable for window-sills, such as *Euonymus japonicus* and its variegated forms. The common *Musk* succeeds almost anywhere, and is quickly increased by division, or may be raised from seed. Seeds of *Mignonette*, *Balsams*, and some annuals might be given, particularly *Nemophilas* and the common *Tropæolums*, but except *Balsams* the plants cannot be successfully grown in dwellings. A distribution of bulbs at the proper time would meet with great acceptance by those whom you intend to benefit, and could be grown satisfactorily.

FORCING STRAWBERRIES (*A. B. C.*).—Your stock of plants from which you obtain runners appears to be deficient in vigour. We advise you to obtain fresh runners from a healthy stock, and to grow such varieties as *Vicomtesse Hericart de Thury*, *Keens' Seedling*, and *President*. As your plants are weakly liquid manure will be beneficial. Nitrate of soda is a quick stimulant, and should be applied at a strength of a quarter of an ounce to a gallon of water, and be used twice or three times a week. You can obtain the price for small quantities by sending for the price lists of those who advertise garden requisites and manures in our columns. If you read attentively the instructions given from time to time in "Work for the Week" and carry them out you will succeed in growing and forcing Strawberries successfully. Cease syringing when the flowers commence opening, and if you gently shake the trusses when the blossoms are expanding to disperse the pollen it will facilitate the setting of the fruit. Syringe the plants occasionally according to the state of the weather when the fruit is swelling, but cease immediately the ripening process commences, and cease

also at that time, employing liquid manure. Clear soot water is a good and safe stimulant for Strawberries.

AZALEAS NOT THRIVING (*V. H. J.*).—So far as we can understand your letter the plants have been permitted to produce gross shoots; and these growing in a natural manner, neither being pinched nor tied down, have deprived the other portions of the plants of the support necessary for producing healthy growths and fine flowers. The first condition of success is healthy root-action: this being secured by proper soil and careful watering, the plants will grow well if kept free from insects. It is then important to equalise the growth all over the plant, so as to produce a well-balanced specimen. This is effected by tying down such growths that it is necessary to retain, and by pinching the tips off the young shoots that are growing luxuriantly. These shoots may be pinched when they have made three or four leaves, and the growths issuing may be again stopped if necessary, leaving all weaker growths unchecked. Your plants being "straggling," we should prefer tying them into shape to cutting them down. The branches may be bent and secured in any position required to form a symmetrical specimen, and if the work is skilfully done the bent stems will be hidden by the foliage. The gross shoots should be trained downwards as much as possible, which will arrest their luxuriance, the weaker parts being left to grow in their natural position. The plants should be potted if they need it some time before their training is commenced, and should be kept in a genial temperature, and be syringed frequently to promote fresh growth. The flower buds not swelling indicates that the growth of last year was not matured. Concise and practical notes on the propagation and culture of Azaleas are given in our Greenhouse Manual, which you can have in return for 10d. postage stamps.

NAMES OF PLANTS (*A. B. P.*).—*Hebeclinium ianthinum*. (*M. A.*).—The Moss received is *Theridium tamariscinum*, *Schimper*; *Hypnum proliferum*, *Lew.* You are mistaken in its having been found in only one locality in the country, for there are few woods where this Moss does not abound; it is also found in wet pastures and old heigebanks generally. Its English name is Tamarisk-like Feather Moss, one of the handsomest of British species. (*A. B. P.*).—1, *Dendrobium chrysotoxum*; 2, *Bifrenaria Harrisonae*; 3, *Cymbidium sinense*; 4, *Begonia purpurea*. (*H. H. P.*).—*Fuchsia cordifolia*.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

CULTIVATION OF KOHL RABI.

THE growth of this plant has not increased, but rather the reverse, during the past twenty years, and we attribute this circumstance to the high and increasing value placed upon mangolds and cattle cabbage during that period. We have, however, from our experience in the growth of kohl rabi much to say in its favour. It appears that it is a crop much approved in Germany and other continental States, including Austria and Hungary, and it is said there are as many as eleven varieties of the plant in cultivation, about four or five of which only seem to demand our attention, and even these differ but little except in shape or colour, and the fact of their adaptation for early or late growth; the early varieties being the most tender, delicate, and of the highest feeding value, whilst the late varieties are better adapted to hold on and be retained in the land during the winter months, upon the same plan as Swedish turnips are retained as spring food for sheep and cattle in the late spring months. We have no root of farm growth more relished by cattle, sheep, and horses than kohl rabi—in fact it was originally grown in this country as a garden vegetable, and was of the choicest and most delicate flavour. We have grown them in seed beds for transplanting. We have occasionally pulled plants when the bulbs were about the size of a walnut, severed the bulb, and, together with the greens, cooked them for use, and we know of no vegetable for the table which can surpass them in delicacy of flavour. It was this circumstance which originally induced us to estimate them so highly as food for cattle, which estimate has been fully realised by the high feeding value when given to cattle. Another peculiarity is that the greens possess as much feeding property as the bulbs. Now, this cannot be said of our other bulbous roots grown as a farm crop. This is borne out by the analysis of Dr. Anderson, as chemist to the Highland Agricultural Society of Scotland, who said, "You will observe that, both in composition and feeding value, the bulbs and leaves are quite identical. They are about twice as valuable as ordinary turnips, and materially surpass the best Swedes." This investigation is very satisfactory, in so far as its results show the importance of the kohl rabi as a feeding plant and profitable substitute for the turnip crop.

We will now direct the attention of the home farmer to other important points in connection with the growth and cultivation

of this plant. It has few or no enemies like the turnip fly in its early stage, and at the later stages of growth the grub and wireworm cannot injure but slightly the stems and roots, because the woody fibre prevails in them to such an extent. The aphides, which often attack the leaves of turnips in a dry summer, and destroy them, never in the hottest of seasons ever injure kohl rabi, nor does it suffer from mildew like Swedes, for it will withstand any amount of drought, especially when grown upon strong clay soils, for which kind of land it is specially adapted, and it can be grown with advantage upon soils too heavy for successful turnip culture. When intended for use at various times that which will be required as cattle food early should be sown early, sowing also the earliest and quickest-growing varieties; the roots intended for winter and spring food may be planted later—about the first week in June, because the bulbs will not be so ripe as those sown or planted early, and will in consequence either keep better in store or withstand winter weather better if allowed to remain in the land. Our experience refers to a period when the system of farming was too high for Swedish turnips, for although we could grow an immense crop still they would not keep sound, but rotted on the crowns. The kohl rabi offered the only advantageous change we could make and upon land where the Swedes would be sure to decay we grew the finest kohl rabi, for the simple reason that the land cannot be too rich for them, and that a sound crop of heavy weight is the sure result of a change from Swedish Turnips, with a crop of 5 tons at least in excess of the Swedes per acre.

The varieties which we recommend for cultivation are Early White or Light Green ("Vienna"), the Oblong Green and the late Green Globe, the late Purple Globe, and the Oblong Purple. These sorts seem all to have a place assigned them by their habit of growth, feeding and keeping value. Those intended for the first feeding should be chosen as above described, and the seed should also be sown in the end of March or early in April, and be allowed to remain where they were sown. Those required for late purposes may be grown as second crops after rye, trifolium, &c., and transplanted from seed beds or from lines before hoeing at several periods, as May, June, July, or August; the latter period with a favourable season will give a full crop of great value in the spring, and should be planted closer, as the bulbs will not come so large as the earlier plantings, but they will go through any winter without injury, be it ever so severe. In taking an account of the weight of crops of this root grown in the three kingdoms we find that in England it is estimated at from 26 to 30 tons per acre, in Scotland from 20 to 25 tons may be expected, but in Ireland from 30 to 35 tons per acre are frequently grown; an average weight of bulbs will vary from 6 lbs. to 10 lbs. In looking to these results as representing the weights of kohl rabi produced the lesson to be learnt is that climate as well as soil and the cultivation will each have its influence, and may be some guide to the home farmer as to the eligibility of the district in which he may be situated. It is not to be supposed that this plant is to be grown in preference to all the other crops of the farm for the root-feeding of stock, because mangold, cabbage, &c., will hold their own against all or any opposition upon suitable soils, and for purposes to which they are usually applied; but it is worth serious consideration how far kohl rabi can with advantage be substituted for Swedish and other turnips upon farms where the roots will be required for feeding in winter and the advanced spring months.

At the time we grew kohl rabi a number of practical agriculturists grew them likewise. Amongst them were Messrs. Bowyer of Hunts, Mr. Pawlett in Beds, and Mr. William Bennett of Cambridge. The latter gentleman states that his practice "is not to drill the seed before the 1st of May. We seldom use more than 2 lbs. of seed per acre drilled on ridges 27 inches apart, thinning the plants in the rows to about 16 inches apart. After ridging the land as if for Swedish turnips we lay out in the furrows 10 tons of farmyard dung, and spread about 5 cwt. per acre of superphosphate rape cake, &c. The ridges are then reversed, which buries the manure in the centre of the ridges. By this method of cultivation

on land worth 80s. per acre to rent we usually grow from 25 to 30 tons per acre of excellent bulbs, besides the greens, which are first-rate food; and where a dairy is kept they are of no small value to the milking cows, as they give no unpleasant flavour to the butter." In feeding sheep on this crop in the autumn even upon dirty land the animals can eat them without difficulty, the bulbs being clean and growing entirely above ground, so different from Swedish turnips. As a mixed crop, say half the land drilled with mangold and the other half drilled with kohlrabi, the mangolds being carted away for cattle; the other half crop can remain until the spring for feeding ewes and lambs. Kohlrabi greens prove the best of food for young lambs when they run forward and are fed separately from the ewes, the bulbs being cut and put into troughs mixed with cake and bean meal both for ewes and lambs, the latter having their food passed twice through the cutter; and in this system of feeding the half crop is quite sufficient to manure and leave the land in first-rate condition for the succeeding crops of corn and grass. After having said so much in favour of this crop it will be only fair to state the principal objections urged against it. First it is said to be a great exhauster of the land, and second that the roots and stalks are both inconvenient and troublesome. In reply to the first objection it must be admitted that it pulls more out of the land than a crop of turnips, but there must of course be a larger amount of manure returned after consumption of such a weighty crop. With regard to the hard stumps they are easily cut off with a sharp hook, and being ploughed in can do no injury to the next crop, because they contain no buds which can sprout; besides which it is far less labour to cut off the stumps than to prepare the roots of Swedes, because the bulbs of kohlrabi are as clean as apples on the tree. It should be remembered that this root, like all the turnip or cabbage tribes, is subject to clubbed roots when the land is out of chalk, but this is nearly all the disease to which kohlrabi is subject. The contrast in growth as compared with turnips is greatly in its favour, as it will bear successfully any amount of dry weather; besides which it is good as an alternation where the land has been for a long period appropriated to the growth of turnips almost exclusively. Hares and rabbits are especially fond of these roots, and therefore must be provided against by storing in heaps or buried under furrows and earthed over. We can recommend this bulb for the feeding of horses especially, because it is not so apt to disorder them as the feeding with either mangold or Swedes. Fattening cattle do well upon them; still they are especially advantageous for feeding dairy cows, as they do not in the least degree injure the milk or flavour of the butter.

WORK ON THE HOME FARM.

Horse Labour.—This should now be supplemented by steam power, for whilst the horses are employed in ploughing and drilling for spring corn, the fallows intended for roots, especially mangolds, may be forwarded in tilth by steam culture. In fact, extra labour upon the fallows is rarely so much needed as upon the present occasion, because last summer and autumn were exceedingly adverse to tillage operations. This, however, was especially the case in the autumn, the harvest being late added to the difficulties occasioned by wet weather and totally prevented the autumn cleaning of stubble land. Therefore, strictly speaking, there is this spring double tillage to be performed upon all soils favourable to the growth of couch grass, and the usual horse power of the farm cannot possibly effect the necessary cultivation for roots, so that the seeding may take place at the usual time. On the first appearance of the clods being dry the wheat land should be rolled, because the effect of the severe frost has been to open and lighten the soil, which will be prejudicial to wheat by favouring the wireworm, unless the heavy roller is used upon the land at the first opportunity. Rolling-in the pasture and the park lands should now be done with the heaviest roller, and we find the Cambridge ring roller of equal value for rolling grass land as for use upon the arable land and crops. The planting of potatoes should now be going on, and the sooner it is finished the better. The distance between the rows should be arranged according to varying circumstances. For instance, upon dry land, such as sandy and gravelly soils, and especially when planted with the early varieties, the lines may well be 2 feet apart; but a late variety like Scotch Champion upon strong or loamy land the rows may be 30 inches apart, or on highly manured land 3 feet apart. Whilst the plants are young a light one-horse plough may be employed between the lines instead of the horse hoe, and at earthing time the furrows may be turned twice towards the plants. The effect of this will be to give a high hill and deeper furrow. The first will be more favourable to the growth of the plant, and the effect of the second will be to carry off more readily any surplus water, a matter of the greatest importance whilst the potato crop is so liable to disease. It must also be understood by the home farmer that the greater the width between the lines the more effect will be produced by the sunlight and drying winds. It must also be considered that the extra width between the hills favouring the use of the plough keeps the land more open and easily searched by the roots of the potato plant, and the runners

will in consequence produce more tubers in number of a more equal size. Our attention was first called to the advantage of wide planting for the keeping varieties of potatoes by a friend who conducted an experiment in his garden. He planted under similar circumstance except as to distance, one part at the usual distance, say 2 feet between the rows, and the other part at a yard wide each way between the sets which were whole tubers. We were present when the crop was lifted, and were astonished to see the difference in favour of the wide planted crop; we now forget the actual difference, but as far as we can recollect there was nearly double the weight of produce, and the tubers certainly were equal in size.

Hand Labour.—Men and women will now be engaged in connection with potato planting, the men in loading the carts and spreading the manure upon the land, the women in planting behind the plough. Where artificial manure is applied to the crop it should be mixed with damp ashes a day or two before the application. Our plan is for a man with a seedlip full of the manure to follow the planters and cast into the same furrow with the sets such quantity of manure as may be decided upon, 4 cwt. of best Peruvian guano with damp ashes to prevent the manure flying before the wind, being equal in our experience to a heavy dressing of good dung. Some men will be employed in the woodlands and hedgerows, and if all the underwood is not yet cut it should be done immediately, and the men employed in making faggots, bays, hurdles, and hoops, so that the various articles manufactured may be carted away early in May in order that the next growth of underwood may not be injured. The weather has been favourable lately and encouraging to the growth of green crops upon the sheep farms, such as rye, trifolium, and Italian rye grass; the latter will be useful upon those farms which have no water meadows, and it may be greatly forwarded in growth by an application of nitrate of soda, Peruvian guano, or sulphate of ammonia. The latter, being about the same price as nitrate, is cheaper in application because it ought to contain 5 per cent. more ammonia. 1½ cwt. nitrate, 2 cwt. Peruvian guano, and 1½ cwt. of sulphate is as much as the crop will need; but it must be remembered, now sheep food is so scarce, that the object of forcing-on the green crop is of more importance than in ordinary seasons when plenty of roots may still be available; at the same time, too, there will be extra food and extra manure returned to the land by the consumption by stock, and some remainder of manure left in the land to benefit the succeeding crop. The shepherds will now be anxious as to the improvement of their young lambs, for the hay being a great essential in feeding them, and the quality being generally so inferior that it will be difficult to induce the lambs to eat it unless it is cut into chaff and spiced or flavoured by the articles sold by Bowick & Co., Simpson, or Thorley for the purpose. This is extremely important, because we know instances this year in which the hay spiced at the time of ricking has been consumed with a relish by cattle, which would in the absence of it been refused altogether; we also know in a case where rye grass hay was got up badly, yet being spiced it was sold to a dealer who reports that it has given satisfaction to his customers when used for the feeding of horses. The first spring of grass has lately made great progress, and where the land is dry cattle may be turned out to graze, returning to the house at night receiving supplementary food. Where the meadows are soft it is too early to feed with cattle, for they tread the and and injure the future growth.

POULTRY IN CONNECTION WITH FARMING.

To devote land entirely to fowls is not making the best of it, for to keep the important cost of rent down they must be crowded in large numbers upon a small acreage, thus promoting disease and sacrificing their profitable qualities. The cost of food, too, for fowls in confined runs is much too great to allow of sufficient profit being made. The question then arises, How are they to be kept in health cheaply and profitably? The answer is, Let them be thinly scattered about the farms in small lots, each lot having a portable roosting house, and let them be treated in exactly the same way as other stock upon a farm, and that is to have an experienced attendant or shepherd whose sole work it is to attend to their wants and make the most of their products.

The many advantages this system has over others are—firstly, there is no cost of rent; secondly, no fencing required; thirdly, they obtain nearly all the food they require by their own exertions which keeps them employed and in health, and the food they get is better suited to produce eggs than any that can be given artificially; and fourthly, they pulverise and manure the soil and destroy insects, so that any injury they inflict is more than counterbalanced by the good they do. Every suitable field may have two or three houses, and these houses contain about fifty hens in each. They will only require feeding once a day, and that should be in the evening just before they go to roost, with whole grain, about one handful to each bird. If taken to the stubbles after harvest they will not require feeding for a long time, also when arable land is being ploughed or fallowed.

No breed is so suitable for this purpose as the Brown Leghorn. It is a good forager, very hardy, easily reared, a constant layer, non-sitter, and good table fowl.

The homestead should be stocked with Brahmas; these will keep up the supply of eggs in winter, and will act as mothers to hatch and rear the young stock in the spring. A small breeding lot of each variety to produce eggs for setting should be carefully selected, special attention being paid to having those hens that have proved exceptionally good layers and that are straight-breasted, fine, healthy birds. These must be kept apart from the rest, and have a fine pure-bred cockerel that is no relation placed with them.

I have given this system of keeping poultry some years of careful study and attention, and find them most profitable stock.

Good Leghorn hens cost me each in keep about 4s. per annum, and they on an average produce about 12s. worth of eggs at market prices, which leaves 8s. From this has to be deducted labour, losses, replenishing of stock, and unforeseen expenses, which amounts to about 2s. per head, leaving a nett profit of 6s. per head without taking into consideration the manure.

It will easily be seen now that the money that is paid for imported eggs and poultry may be kept in this country if the majority of farmers sent the produce to market of five hundred to one thousand well-managed hens, instead of sending from, as they now do, forty to fifty uncared-for barndoor mongrels. Small holders of land may turn it to far better account than they do. From fifty to 150 fowls will do well upon a few acres, and as no labour would have to be charged, they being looked after by some member of the family, the profits would be considerably increased.—EXPERIENCE.

MANAGEMENT OF LAYING HENS.

SPRING is the season during which in our opinion poultry requires the most management, especially in the matter of diet. It is a variable season, and food which supplies warmth must be regulated by the temperature. Laying hens, of which eggs are required for sitting, now demand particular and intelligent attention. As we have often remarked, it is commonly thought that an egg is an egg, and that so long as a certain number are produced there will, barring accidents, follow a corresponding number of chickens. We have repeatedly exposed the absurdity of this idea, and dwell on the fact that the parent birds must be in good health and vigour to produce a strong progeny. We have, however, for the most part written of the care to be taken of the cock's health. As he is probably the chancier of many wives his state of health is of the highest importance, for it influences the produce of all the yard. We are now, however, occupied with the laying hens. It is absolutely necessary that they should be neither too fat nor too lean, neither stuffed nor starved; management is necessary to secure this due medium. We are frequently asked, How much ought each bird to consume daily? It is impossible to answer such a question, so many are the circumstances on which the reply depends—viz., the breed, size, and age of the birds, the weather, the kind of run they have, its soil and aspect. Our plan at this time of year is to give all the laying hens two feeds a day—one of soft food—i.e., barley and other meals mixed according to the directions we have often given, from seven to eight o'clock in the morning, the other of grain at five o'clock in the evening. Our birds are chiefly at complete liberty. Where, however, laying hens are confined in runs where there is little to be picked up nine or ten hours is too long to go without food, and a few scraps rather to amuse than to feed them should be given at midday.

Now as to the quantity to be given at each feed. We are generally told to give birds as much as they will eat greedily. This is in our opinion a most delusive test. Where they have complete liberty they will probably not eat more at their two meals a day than is good for their health, though we are by no means sure of this; but fowls in partial or complete confinement get an unnatural appetite, and will invariably swallow with apparent avidity far more than is necessary to keep them in good condition. Many laying hens die from overfeeding and internal fat. We doubt if one in a thousand dies from lack of nourishment. Bantams above all others transgress in eating, especially if they be kept among larger birds, for they pick up grain for grain with their giant companions so long as any is left. We have had much trouble with Bantam hens that from this cause have had diseases of the egg organs. The test of sufficiency which we recommend is to examine the hens' crops before feeding. At first it may be well to catch and feel one or two, but a practised eye will soon see if they are distended. If this is the case at meal time you may be sure that the former meal was too large. The crop should be entirely emptied save of the insect or vegetable provender found by the birds themselves before they are fed again; if it is not so, give hardly any food at the time, and reduce the fare for the future. A practice which we have recommended for all poultry is especially advisable in the case of laying hens—viz., to make them run after their food, and so compel them to take exercise. In spite, however, of all these precautions some hens, especially Asiatics, will

become too fat. A few doses of castor oil are a good remedy, but that provided by Nature is by far the best—viz., the rest taken during incubation.

Hens of the non-sitting varieties very seldom suffer from internal fat. Nearly all others can be cured if only they lay and become broody. Of course if a hen is so fat that she never lays at all little can be done, save putting her on a judicious system of abstinence; but if once a hen lays, even though she begins with malformed or soft-shelled eggs, there is always considerable prospect of her recovery. Leave china eggs in the nest of such a bird, and thus encourage her to become broody. If it is especially desirable to get another sitting of eggs from her let her sit two or three weeks on sham eggs, giving her the minimum of food, and then turn her off. It may be she is a famed show bird and will be wanted for summer exhibitions. In this case her nest should be a large round open basket, in which she can sit well and where her tail is not rubbed against sides or wall. We often let our best exhibition hens sit early in the spring in such a place, and when the chickens are hatched confine them in the large Turkey coops at liberty in the early spring for a while, and then give up a good run to the mother and brood. She will not then spoil her plumage, and will probably be in health and feather for the Bath and West of England or other summer shows. Incubation is a cure provided by Nature for many ailments, especially those of the egg organs, and we much fear lest the common use of artificial incubators should deprive hens of this their due relaxation. Of course when anything like poultry farming is attempted and where a number of hens are kept for only eighteen months, during which time it is necessary to get as many eggs as possible from them this advice is not applicable.—C.

VARIETIES.

WE have before us the schedule of the Accrington Poultry and Pigeon Show, to be held on April 29th. There are twenty-nine classes for poultry, with prizes of £2, £1, and 10s. in each class; and nineteen classes for Pigeons, with prizes of £1, 10s. and 5s. in each class. The Secretary of the Show is Mr. W. J. Holden, 15, Dutton Street, Accrington.

—FERTILISERS.—It is satisfactory to learn that the Royal Agricultural Society will carry on experiments in order to test the comparative value of soluble and insoluble phosphates, the Duke of Bedford, with his customary liberality, having granted the use of a field at Woburn for the purpose. The subject has acquired considerable interest through the publication of the results of the Aberdeenshire experiments, and it is of great importance that similar experiments should be carried out on different soils.

—CONCENTRATED LABOUR.—It sounds very grand indeed to read accounts of wheat and corn fields measured by the square mile, and to count herds of cattle and flocks of sheep by the thousand, but there are many leaks inseparable from over-grown and widespread business of any kind, and farming is no exception to the general rule. I believe that the most solid and enduring kind of prosperity to be found in this country, is not among the men who rob the virgin fertility from the largest number of acres, but among those who concentrate upon a small area all the capital and labour it is possible to employ with profit.—B. D. PHILBRICK (in *The American Cultivator*).

—MANURE FOR POTATOES.—Potatoes, says the *Irish Farmer's Gazette*, require at least 20 tons of good farmyard dung per statute acre. Manure manufacturers prepare a special "potato manure," which is composed of those substances best adapted for promoting the growth of the plant, and in ordinary cases it saves trouble when such special manure is used; but for those who wish to make up a mixture for themselves we give the following formula: 4 cwt. of superphosphate, 2 cwt. of best Peruvian guano, 4 cwt. of kainit per statute acre. These quantities refer to the application of artificial manures without farm dung; with half farm dung half the quantities given will be sufficient. Kainit is indispensable when potatoes are grown on bog or moory soil; but it is not so much required in the case of heavy clay. The addition of 4 cwt. of common salt is usually advantageous. In former years nitrate of soda was introduced into the mixture instead of Peruvian guano; but the price of nitrate of soda, and also of sulphate of ammonia, which may be employed instead of nitrate, precludes those substances from being profitably employed this season.

PLANTS FOR BEES.

NOT the least attractive among the collateral hobbies of the bee-keeper will generally be found the cultivation of bee plants. As a rule those plants should be chiefly cultivated by bee-keepers which flower earlier or later than the main honey harvest. When fruit trees, clover, limes, and heather are in bloom any specially cultivated plants are not only of comparative insignificance, but will as a rule be neglected. The case is quite different with plants flowering in early spring and late autumn. Of the former class, besides the well-known snowdrop and crocus, I cannot speak too strongly of the virtues of *Arabis alpinus*, *Aubrietia purpurea*, and *Saxifraga oppositifolia*. These all belong to the class of rock

plants, but the two former grow well in any border. All are not only valuable as bee plants, but, flowering as they do in early spring, are quite a pleasant sight in the garden. The *Arabis* and *Aubrietia* are easily grown from seed, but succeed best when raised in a frame and planted out when large enough to handle. I have had the *Arabis* in flower for ten months of the year, but it is most luxuriant in March and April. Another beautiful spring flower is the heath, *Erica carnea*. This heath may be obtained in quantity of any nurseryman, and is almost as easy to grow as box edging. I might add other spring plants, but the above are the kinds I have found most serviceable.

There is usually an interval of a fortnight or more between the fruit blossoms and clover, when forage is comparatively scarce. In this locality I find that the acres of raspberry will, as a rule, fill the gap, but where there are no such resources the bees may be kept in good humour by a bed of *Phacelia tenacetifolia*. This is an annual, and flowers in about six weeks from the time of sowing. Being very hardy, a succession of sowings may be made from the earliest spring till late in summer. It yields considerable honey and pollen.

Those bee-keepers who have permanent locations will also find it profitable to invest in a few hundred flowering shrubs, selected to bloom about this season. Of these I recommend the *Cotoneasters*, both *microphylla* and *Simmondsi*, and also the beautiful *Berberis Darwinii*. The latter two may be planted as a hedge, but *B. Darwinii* should be pruned as little as possible. Its beautiful yellow wax-like flowers, contrasting with its dark glossy foliage, make it a very pretty sight. It has the advantage also in mild localities, that it flowers twice during the season—in May and September.

There is considerable choice of autumn-flowering plants for our purpose. I merely mention those I can from experience recommend. *Phacelia* has been already referred to. *Mignonette*, if sown in June, should flower till frost, and needs no one to sound its praises. *Borage*, though not a handsome plant, is useful at this season, and possesses the valuable property of secreting honey in all weathers. Its pendulous blooms shelter the nectar from rain, and enable the bees to work on it when everything else fails. The last of my favourites is the *Bokhara* or *melilot* clover. This is a biennial, and flowers the second year. I have had it 11 feet in height, and a mass of bloom from top to bottom almost till Christmas; and bees are excessively fond of it, lured by its rich fragrance which is inhaled at many yards' distance. One of the most graceful plants I ever saw was a single one of the yellow variety, tied to a stake for support, but naturally forming a perfect pyramid of green and gold.

I have tried many of the most noted of the American bee plants, but whether from the influence of soil or climate I have yet found none equal to those I have enumerated. It is still an unsettled question whether it would not pay to grow honey-yielding plants by the acre. It certainly ought when these same plants are valuable for seed or fodder. But there are few men unselfish enough, not to say enterprising enough, to invest in costly acres over which their neighbours have the same right of pasturage as themselves; still, in the line I have indicated much may be done to lengthen the foraging season; and though there may be little apparent gain in honey, much loss by robbing may be prevented, for idle hands are proverbially inclined to mischief. It is astonishing also how little will in spring suffice to stimulate steady brood-rearing, which, however, must not want the generous aid of the syrup bottle and the flour basket.—*WM. RAITT, Blairgowrie.*

FOUL BROOD AMONGST BEES. SALICYLIC ACID VAPOUR, AND THYMOL. (Continued from page 170.)

MR. HILBERD.—As I receive a great many inquiries respecting the best manner of applying salicylic acid vapour I thought it advisable to bring an apparatus with me to show you how to use it. This part is made of tinned brass and contains spirits of wine, the spirit flame being regulated by a screw. If the heat were allowed to become too intense the salicylic acid would take fire; vaporisation must progress slowly. Salicylic acid is a combination of carbon and carbolic acid; if, therefore, you overheat it you of course eliminate the carbonic acid, and carbolic acid remains, the smell of which becomes so pungent that it does not only kill the foul brood but the bees also. It is better that a moderate flame should be kept up a little longer than to heat the acid too intensely. The next question is, What is the quantity of salicylic acid to be used for a colony? My advice is to use rather too little than too much. It is better to repeat the process at intervals. You may increase the quantity up to one gramme per hive, but half a gramme ought to be quite sufficient, and this is placed upon the apparatus and the vapour ascends, without, however, being allowed to take fire. The apparatus is kept closed to prevent the bees in their excitement from getting inside, and the upper part having a perforated cover no bees can tumble into it from above.

The manner of using the apparatus depends on the shape of the hive. In a hive with moveable combs or in the dome-topped

straw hive the apparatus is placed on the floor-board, so that a space of about 6 inches is left between it and the combs, which is sufficient for the vapour to disperse, but it is absolutely necessary that the entrances should remain open in order to allow of the escape of the vapour. The salicylic acid is deposited in small crystals on the walls of the hives, the brood cells, the hairs of the bees, &c., and is an absolutely destructive poison to bacteria. There are some hives in which it is impossible to make use of this apparatus, and it then becomes necessary to put a funnel on, and when this has been done the apparatus is closed and the funnel placed against the entrance so that the vapour enters sideways.

Gentlemen, as salicylic acid would be irritating to many people I would recommend the use of thymol instead, which, however, is more expensive. Five years ago I employed thymol for external application, but have discontinued using it owing to several cases of poisoning which I was able to trace to its use. I used it in the liquid state, and as a great many bees licked it off one another their bodies became distended and they died. The case is very different when dry thymol is used, in which state it is not injurious to bees and acts far more effectively than salicylic acid; it does not irritate the bees either. In an article by a Mr. Holz, which appeared in the "*Bienenzeitung*" a short time ago, he describes the application of thymol as if it were something quite new. If this gentleman will kindly refer to the "*Bienenzeitung*" he will find that it was used by me years ago. He dissolves it in alcohol in the proportion of 4 to 1, and allows the alcohol to evaporate. Gentlemen, as the vapour of salicylic acid irritates you at this distance, how much more would the poor bees suffer if alcohol were added as recommended by Mr. Holz? Gentlemen, the quantity of alcohol which we consume is quite large enough, and I don't think there is any need to make our bees partake of this liquor. The thing can be managed in a much more simple way. I adopt the following plan to evaporate thymol, which, as I have stated before, does not in the least irritate the bees. I take half a tablespoonful of water and add half a gramme of thymol, which is a highly volatile substance, and in this respect not to be compared to salicylic acid. This quantity would be about sufficient for two hives. I now place this solution into the apparatus, converting the latter into a kind of boiler by means of bread-crumbs soaked in water, which I squeeze into the corners, thus closing the apparatus hermetically, and you may see thymol vapour ascending and penetrating the smallest crevices. It is even possible to use the apparatus as a refracteur (blower)?

But don't for a moment imagine, gentlemen, that the vapour alone will cure colonies infected with foul brood. It is absolutely necessary that an internal application of salicylic acid should go hand in hand with the external cure. The organism of the bees of a colony suffering from foul brood is infected in all its parts by millions of bacteria, and it is necessary to disinfect by feeding the bees with honey or dissolved sugar to which some salicylic acid has been added. I may mention here that thymol must in no case be allowed to be taken internally. For internal application salicylic acid alone is to be used, the food being prepared by mixing 2 lbs. of dissolved sugar or 2 lbs. of honey with a quantity of salicylic acid not exceeding one gramme, allowing the mixture to simmer on the fire until the whole is dissolved. About 1 lb. of this preparation, which is equal to 458 grammes, will be sufficient for five colonies. But then comes the question, How often is the food prepared as I have mentioned to be administered? At the commencement it must be done on two successive days at least, and then there may be an interval of a week; at the end of this time more vapour should be applied, and then the colony be left alone for a fortnight; after this another application of vapour should take place, and be repeated a month later. The main point is, do not take for granted that the colony is cured if you do not find any cells in the hive that contain foul-brood matter. It is always possible for some of the bacteria spores to have escaped being destroyed, and these in a very short space of time increase a millionfold. In order to effect a radical cure and to prevent any return of this disease it is necessary that the stocks should be fumigated from time to time for at least a whole year.

I may say here that it is certainly better to shut the stable door before the horse is stolen. I have not had a case of foul brood in my apiaries for several years, but before placing my colonies into their winter quarters as well as at the end of the winter I always disinfect them moderately, and then I am safe that no foul brood can possibly arise. I would advise all gentlemen who keep a considerable number of colonies in their apiaries to procure this apparatus.* Though foul brood may be raging in your neighbourhood, if you expose your combs to the vapour of salicylic acid in the manner I have indicated it is absolutely impossible for the disease to break out among your colonies. But as I have said, the remedy must be applied in time. As you cannot cure a patient when breathing his last, so it is impossible to cure a completely diseased stock in which there is no longer any activity. If the outbreak of the disease be noticed before perhaps more than 80 to 50 per cent. of the colonies have become infected,

* The apparatus may be obtained of Messrs. Geo. Neighbour & Sons, 148, Regent Street, W.

and before the bees have left off gathering honey and pollen, the remedy will certainly prove effective to cure the evil in a short time. If I have not explained myself very clearly on some points I shall be very pleased to answer any question you may ask. (Loud applause.)

Summer of Treunitz near Eger related the outbreak of foul brood in his apiary, and stated that he had cured his colonies with salicylic acid. He wished to know—1, The cause of the outbreak, as the disease could not possibly have been due to the chilling of the brood; 2, Whether the change of queen had been beneficial in curing the colony; 3, Was the death of the worker bees, which he noticed on the ground in his apiary, due to foul brood? As time was getting short he asked that these questions might be answered in the "Eichstadt Bienenzeitung" or some other journal.

Pfarrer Rabbow.—I will only make a remark or two to supplement the statements you have heard. Havana honey may be looked upon as a cause of foul brood. I know it to be so from my own experience. The transfer of the colony into a new hive is very much to be recommended. According to an account of the Baltic Central Association foul brood is prevalent there over an extensive area, and not in a few places merely, as stated by Mr. Reinert. I have made inquiries on this point with the following result:—In none of the hives containing swarms of the present year has it been possible to discover foul brood, but only in colonies with old combs. I take this opportunity to observe that foul brood is not of recent occurrence in Pomerania, but in all probability existed there three hundred years ago. Foul brood is frequently the cause of the loss of all the colonies in an apiary; and as the old hives are often left lying about without the people knowing that they are infected with foul brood, these hives act as a vehicle to spread the disease.

Stambach of Oberhofen, Lower Alsace.—I should like to supplement the statistics of bee-keeping. We have just heard that foul brood has been in existence in the north of Germany for hundreds of years. In the Eger country the disease became known in the present year, and in Alsace in 1866. We have splendid pasture for our bees in Alsace, but in many places all our colonies have perished, and on being asked how it is that our bee-keepers have comparatively small number of stocks in their apiaries now, I was unable to assign a reason. But I noticed there was something wrong in my own apiary. Having been reading about foul brood it struck me that my bees might possibly be suffering from this disease, and this proved to be the case. I then concluded that as my own stocks had died of foul brood the colonies in neighbouring apiaries had doubtless perished from the same cause, and on examining some straw hives I found the colonies had died of this disease, and in this way I discovered the cause of so many apiaries in Alsace being ruined. The disease itself existed in Alsace quite a century ago.

Mr. Hilberd.—I will just mention a case showing how easy it is to get foul brood, even in the entire absence of any infectious matter in the apiary. Take a colony which only breeds drones and feed it stimulative, and within a month you will find it infected with foul brood. Well, what is the cause of this? It is simply a consequence of the difference in the food between drones and workers; and, the eggs being laid by a worker bee, the bees show less disposition to cleanse the cells and to gather honey and pollen. I have tried several times to cause foul brood in this manner and my attempts never failed. I do not think that it can do any harm in well-populated hives; but when colonies are small part of the brood is left in the cells, then foul brood may easily arise, though in my opinion it is not caused by it directly.

Dr. Pollman.—If you cut away the tops of drone cells in a populous colony you will find the cells cleansed within twenty hours after, however large the combs may be. I quite agree with Mr. Reinert that bee-keepers themselves may carry this disease from one place to another. I myself have carried it to other apiaries. The causes of foul brood, however, may be multiplied a hundredfold, as Mr. Hilberd has told us.

Professor Dr. Butlerow of St. Petersburg.—I merely wish to state that we in Russia, too, owe a great debt of gratitude to Mr. Hilberd, and I at least am one of these grateful people. I had foul brood in my apiary, and attempted to effect a cure by means of phenole, which indeed mitigated the evil but did not cure it. Only by using salicylic acid did I become master of the disease. I have only one more observation to make—namely, that it might perhaps be desirable to try and cure foul brood by salicylic acid in combination with soda (salicylate of soda), as the substance is very soluble in water and might be suitable for internal application. I do not know, however, whether it would be effective, and can only say that medical men prescribe salicylate of soda in cases of infectious diseases.

President von Homers.—Gentlemen, the question which has been started at the last moment does not really form part of our programme, and it would be better, therefore, that it should be discussed in the "Bienenzeitung." But I do not hesitate to say the explanations which we have heard as to the nature of foul brood and the cure for it have been stated far more clearly than they have ever been before, so that we have made very substantial

progress in this matter, and I am sure I shall be expressing the feeling of this meeting in proposing a cordial vote of thanks to the gentleman who has done so much to solve the question of foul brood. (Loud cheers.)

"According to official communications from Berlin His Imperial Majesty the Emperor, at the request of the Minister for Agriculture, has been pleased to confer upon Mr. Emil Hilberd, estate proprietor of Maciejew, near Orlow, the Royal Prussian Order of the Crown, fourth class, in recognition of the services rendered by him in discovering and making known for the public benefit an effective remedy to cure foul brood."—(Bienenzeitung, No. 7, 1879.)

OUR LETTER BOX.

MUSTY-FLAVOURED EGGS (A. C. Bunay).—Give the hen a tablespoonful of castor oil, and another tablespoonful after the lapse of a day.

COMB FALLEN (Omey).—You do not say if your hive is a bar-framed hive; if so, we would advise you to readjust the comb that has fallen with a few bits of tape. These can ultimately be removed. If it is chiefly drone comb we would remove it, also if it is in a straw hive. It may be utilised hereafter in a bar-framed hive when you have a swarm to hive. If the comb is very old it were better to destroy it.

HENS EGG-BOUND (Séraf).—Keep them on low diet of boiled mashed potatoes and boiled rice for a week or more, giving a dessert-spoonful of castor oil, and a pill containing one grain of calomel, and one-twelfth of a grain of tartar emetic every second day for a week.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.		9 A.M.					IN THE DAY.					Rain.
1880.	Baromet. terrace alt. 111 feet.	Hygrome- ter.		Direction of Wind.	Temp. of Sun at 1 foot.	Shade Tem- perature.		Radiation Temperature.				
		Dry.	Wet.			Max.	Min.	In sun.	On grass.			
March.												
Sun. 7	Inchea.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	In.		
Mo. 8	30.084	62.0	48.3	N.W.	45.0	54.3	45.1	66.1	87.8	61.0	0.110	
Tu. 9	30.409	41.7	38.8	N.E.	43.3	54.4	39.4	103.4	37.4	—	—	
We. 10	30.397	43.3	42.6	S.S.E.	44.6	56.7	39.6	78.3	40.8	—	—	
Th. 11	30.142	47.9	47.4	N.W.	44.3	58.2	42.0	107.2	38.2	—	—	
Fri. 12	30.401	39.3	39.0	N.E.	44.1	55.0	34.4	92.2	38.8	—	—	
Sat. 13	30.374	45.3	42.4	S.E.	44.3	58.7	39.3	97.0	40.8	—	—	
	30.323	47.9	44.8	N.	44.3	61.3	39.0	108.3	32.4	—	—	
Means.	30.338	45.1	43.6		44.3	56.3	39.6	93.3	38.4	61.0	—	

REMARKS.

- 7th.—Overcast morning; drizzling rain in afternoon; heavy rain in evening.
8th.—Fine, but not very bright day.
9th.—Misty dull morning; dark at intervals in forenoon; very fine bright sunny afternoon.
10th.—Foggy morning, followed by a very bright fine warm day.
11th.—Frost in early morning; bright and warm in middle of day; cool and cloudy in evening.
12th.—Overcast in morning; bright sunshine from noon; cool wind.
13th.—Clear, bright, sunny, warm day.
Another rather warm week, the temperature being nearly that usual in the middle of April.—G. J. SIMONS.

COVENT GARDEN MARKET.—MARCH 17.

OWING to the approaching dissolution the sale for hothouse goods has considerably fallen off; indeed we may look forward to a very dull time for the next few weeks, good samples of Grapes alone maintaining their value. Outdoor vegetables have fallen considerably.

FRUIT.

		s. d.	s. d.			s. d.	s. d.
Apples.....	½ sieve 2 6 to 4 6			Nectarines	dozen 0 6 to 0 8		
Apricots.....	dozen 0 0 0 0			Oranges	♣ 100 4 0 12 0		
Cherries.....	box 0 0 0 0			Peaches	dozen 0 4 0 0		
Chestnuts.....	bushel 12 0 16 0			Pears, kitchen ..	dozen 0 0 0 0		
Figs.....	dozen 0 0 0 0			dessert.....	dozen 3 0 0 0		
Hilberts.....	♣ lb. 0 0 1 0			Pine Apples	♣ lb 1 0 3 0		
Cobs.....	♣ lb 0 0 1 0			Piums	½ sieve 0 0 0 0		
Gooseberries.....	½ sieve 0 0 0 0			Raspberries	♣ lb. 0 0 0 0		
Grapes, hothouse ..	♣ lb 6 0 10 0			Strawberries.....	♣ oz. 0 6 1 0		
Lemons.....	♣ 100 6 15 0			Walnuts.....	bushel 0 0 0 0		
Melons.....	each 0 0 0 0			ditto	♣ 100 0 0 0 0		

VEGETABLES.

		s. d.	s. d.			s. d.	s. d.
Artichokes.....	dozen 2 0 to 4 0			Mushrooms	pottle 1 0 to 1 3		
Asparagus.....	bundle 8 0 10 0			Mustard & Cress	punnet 0 2 0 0		
Beans, Kidney ..	♣ 100 1 0 1 3			Onions	bushel 3 0 0 0		
Beet, Red.....	dozen 1 0 2 0			pickling.....	dozen 0 0 0 0		
Broccoli.....	bundle 0 2 1 6			Parsley..... doz. bunches	0 0 0 0		
Brussels sprouts ..	½ sieve 3 0 3 3			Parsnips	dozen 1 0 2 0		
Cabbage.....	dozen 1 2 0 0			Peas	quart 0 0 0 0		
Carrots.....	bunch 0 4 0 6			Potatoes.....	bushel 3 8 0 0		
Capiscums.....	♣ 100 1 6 2 0			Kidney.....	bushel 4 0 0 0		
Cauliflowers.....	dozen 0 0 3 6			Radishes..... doz. bunches	1 6 0 0		
Celery.....	bundle 1 6 2 0			Rhubarb.....	bundle 1 0 0 0		
Coleworts..... doz. bunches	3 0 4 0			Salsify.....	bundle 1 0 0 0		
Cucumbers.....	each 0 1 0 3			Scorzera.....	bundle 1 6 0 0		
Endive.....	dozen 1 0 2 0			Seakale.....	basket 2 0 3 0		
Fennel.....	bunch 0 2 0 0			Shallots.....	♣ lb 3 0 0 0		
Garlic.....	♣ lb. 0 6 0 0			Spinach.....	bushel 5 0 0 0		
Herbs.....	bunch 0 2 0 0			Turnips.....	bunch 0 0 0 0		
Leeks.....	bunch 0 3 0 4			Vegetable Marrows	each 0 0 0 0		

WEEKLY CALENDAR.

Day of Month	Day of Week	MARCH 25—31, 1880.	Average Temperature near London.			Sun Rises.	Sun Sets.	Moon Rises.	Moon Sets.	Moon's Age.	Clock before Sun.	Day of Year.
			Day.	Night.	Mean.	h. m.	h. m.	h. m.	h. m.	Days.	m. s.	
25	TH	Royal Botanic Society* at 3.45 P.M. EASTER SUNDAY.	50.9	32.8	41.9	5 52	6 30	5 23	4 55	14	5 55	85
26	F		51.2	32.6	42.2	5 50	6 31	5 54	5 13	15	5 57	86
27	S		54.1	34.1	44.1	5 47	6 23	5 19	5 32	16	5 18	87
28	SUN		53.0	34.0	43.5	5 45	6 25	9 45	5 53	17	5 0	88
29	M		53.7	33.4	43.5	5 43	6 26	11 9	6 26	18	4 41	89
30	TU		53.7	34.3	44.0	5 41	6 28	morn.	7 3	19	4 22	90
31	W		53.3	33.9	44.5	5 38	6 30	0 26	7 54	20	4 5	91

From observations taken near London during forty-three years, the average day temperature of the week is 52.9°; and its night temperature 33.6°.

PLANTING CONIFERS IN WOODS.



O doubt the planting of Conifers has often been carried out without due consideration; anywhere and everywhere have they been introduced with little regard to their appropriateness for certain positions. Let us not, however, rush to another extreme and exclude them altogether even from woods.

Such sweeping measures seldom prove satisfactory. Rather let us adopt the happy mean of selection, taking care only to plant those which we have proved to possess characteristics suitable for certain positions, and that harmonise with certain surroundings. Retinosporas, Thujas, many Junipers, Cryptomerias, Cupressuses, and certain species of other genera of trim growth and formal aspect are undoubtedly best retained in dressed grounds; but among the species of *Abies* and *Pinus* we have noble timber trees worthy of a home in any forest, some undoubtedly of formal but not unstately aspect, others as wildly picturesque as anything indigenous to the soil of this country.

I do not assert that Conifers should be introduced into every wild woodland, for there are features which they would mar rather than embellish. Take for example a grove of fine old Beeches, stately, majestic, symmetrical, and elegant, the huge stems rising like massive columns. Here Conifers would undoubtedly be quite out of character, as in point of fact would any other tree. A fine Beech requires no foil, it is always beautiful. Another example that may be usefully cited occurs in the beautiful grounds of Pentillie Castle in Cornwall. From one side of the Castle terrace a lawn slopes downwards to a stream, forming one side of a valley, the other side being a dense wild wood. There are numerous fine specimens of *Pinus insignis* and other Conifers on the lawn, but the wooded slope beyond has no Conifers except a clump of Scotch Firs planted in the background at its highest point with the happiest effect. A boundary belt of Scotch Firs, or Firs dotted among the deciduous growth, would have spoilt all; but the solitary clump was an artistic touch, imparting relief and beauty at a point so distant from the lawn Conifers as to be regarded separately, and valued for what it was—just a picturesque clump of perennial greenery, and not a collection of fine specimens.

I live in a wood where Beeches, Birch, Holly, and Mountain Ash abound; there are whole acres of Heather, and the Bracken in some parts grows higher than my head. The surface is undulating and broken with hills, valleys, dells, and numerous Fern-fringed streams. In a wood so rich in natural advantages, and which is probably no unworthy rival of that which "WYLD SAVAGE" writes about so charmingly, only a few places can be suitable for Conifers; yet we must not forget the woods of a flat country, often utterly monotonous and tame. Lately I was driving through a wood of this kind. On each hand the drive was shut in by a copse of Hazel underwood thickly interspersed with Oak, having that stunted appearance which is so certain an indication of a poor thin soil. The wood was a large one,

and so far did this copse stretch that the way seemed interminable. At length a curve in the drive led into a grove of old Scotch Firs, none of them of extraordinary size but individually picturesque, and the effect was enhanced by the depths of shadow up the long arcades, chequered by occasional gleams of brightness where the sunshine found entrance among openings in the foliage. There was nothing trim or formal there; it was a piece of wild woodland in the true sense of the term, the one redeeming feature, all the more appreciated from the aspect of utter sameness pervading the other parts.

One other such wood do I know, but it is never offensive, for the simple reason that what little is visible acts as a foil to an avenue of magnificent old Scotch Firs through which the drive runs. This latter drive is probably some 30 feet wide; the Firs stand well back from it, and are far enough apart to do full justice to their noble proportions. In it I found the realisation of an ideal avenue, the formation of which through such woods I had long before advised in the pages of the Journal. I am aware that it is an open question whether the sides of such a drive might not be rendered equally ornamental with other trees, but can there possibly be any good reason for not planting such an avenue? I have the highest respect for the authority adduced by "WYLD SAVAGE" in support of his views, and cannot suppose that he would condemn the planting of any tree in a wood however wild, that when it attains its full development is known to harmonise with such a scene.—EDWARD LUCKHURST.

POTATOES IN IRELAND—CULTURAL NOTES.

In Ireland the Potato crop has been a complete failure in many districts this year, and a partial failure in all, not only in quantity but still more in quality. The estimated loss to the national prosperity in this way has been set down as £5,000,000 from reliable statistics. This crop being the peasant's mainstay it can be readily understood from this cause alone, why an appeal in their behalf has had to be made, not only to England, but to all the world for aid. Any information that may help to avert such a calamity in future must necessarily enlist the sympathy of all.

Some years since, when a pupil at the Government Farming Institute at Glasnevin, I conducted some experiments under the direction of Professor Baldwin with some thirty different varieties of Potatoes, many of which are not now in commerce. To the information then gained I have since tried assiduously to add. Scotch Champion has recently come to the front with two strong recommendations—excellent quality and a disease-resistant. It is not an early Potato, and for the general public this is also a recommendation, as those that are I find keep very badly for table use. This applies to most of the early kidneys, which should be consumed in July, August, and September. The only other variety I have heard of in Ireland to maintain this character of disease-resistant is *Magnum Bonum*. It is very prolific, a good keeper, but comparatively expensive; but if one stone of this Potato produces three times

as many sound tubers of good quality as a cheaper kind, the difference may be more nominal than real.

Your correspondents have already drawn attention to the spurious kinds now being sold as Champions, and this is just what might be expected. The Duchess of Marlborough's Committee ordered £30,000 worth alone; the Mansion House Committee and every seed scheduled union in Ireland has followed suit, as well as paternally disposed landlords for their poorer tenants. Now, I ask, Are all likely to get this much-coveted variety? And I answer, Certainly not. A gentleman who knows, writes to the *Dublin Daily Express*, telling of a cargo of White Rocks that left an Irish port, touched at a Scotch one, and immediately returned Scotch Champions. Well, even so, one advantage will be secured—there will be a change of seed, and this is an important point in Potato culture.

I will now ask, Why does one variety resist disease, and why is another affected? I have long believed it to be a question of maturation or non-maturation, the latter meaning degeneration. Fully matured tubers will produce robust healthy stalks; the unripened will be puny and delicate, and a certain prey to any disease. Potatoes, like all other plants imported from and native of a warmer climate, degenerate in colder countries after a limited number of seasons' growth. If not, let some reader of ripe age try and remember the varieties of Potatoes that prevailed in his youth and say if they are the varieties of to-day? After some years the robust habit diminishes, and in a wet sunless season such as the last no perfect ripening takes place; and seed so produced is more subject to disease, and the plants still more certain to degenerate the following year. After a cold, moist, and sunless season such as the last it is advisable, I think, to procure seed if possible from a warmer climate.

Shallow planting is conducive to maturation. I have never found a Potato sweet or floury that had been deeply buried. It would be impossible for air and sunheat to penetrate to a depth from 6 to 12 inches where I have seen sets placed and covered. Remembering the careless and unthinking way Potatoes are often planted, and the small refuse tubers often employed, the wonder is there is not a failure every year; and large whole tubers are still worse for sets.

As to soil, none is better than a loose friable loam, tolerably rich, but not liable to retain moisture. A mistake I have frequently seen is to cast out fresh half-decomposed manure and plant the sets thereon. They should be resting on the soil and surrounded by it, and the manure should if possible be old and well decomposed. In the market gardens around Paris, London, and Dublin a preference for early sowing is given to stable manure. The cut sets should be rubbed with cold slaked lime to induce callusing over before they are planted. No definite rule as to distance asunder can be laid down. *Magnum Bonum* or *Champion* will require twice the distance of small early kinds.—W. J. M., *Clonmel*.

AFTER communicating with the Secretary of State, the Right Hon. R. A. Cross, and the Local Government Board, Dublin, the Committee of the International Potato Exhibition have issued the following recommendations relative to the cultivation of Potatoes and the varieties best suited for restocking those districts in Ireland which have suffered so severely from the failure of the crop last year.

1, The land intended to be planted with Potatoes should be effectually drained, for if it become saturated with moisture at any time while occupied with the crop disease is likely to ensue. The neglect of drainage in Potato culture has been so largely attended with disappointment and disaster that it is impossible to overrate the importance of the subject.

2, The land should be prepared by deep digging and liberal manuring with whatever cheap fertilisers the district will readily afford. The cow-byre and pigstye should be regarded as supplying life to the Potato crop. Weeds and parings of heath soil, burnt in small heaps carefully stopped with earth or clearings of ditches to prevent flame, will furnish an excellent fertiliser at little cost and suitable for every kind of soil. Where the land is poor and sandy a mixture of kainit and superphosphate of lime, to be used at the rate of from 3 to 5 cwt. per acre, would be likely to prove highly valuable in aid of the crop. In places contiguous to the sea the people should be encouraged to manure their Potato plots with seaweed, wrack, shells, and sea-sand, all of which contain minerals that conduce directly to the healthy growth of the Potato.

3, Only on dry sandy soils should the dibber be used in planting Potatoes. The best mode of planting is to open shallow trenches with the spade or plough and lay the seed therein at regular distances, to be covered about 4 inches deep only in the first instance. When the shaws first show the ground should be well

worked between with fork, hoe, or plough, to keep down weeds and admit air into the body of the soil. In about three weeks afterwards they should be moulded up. It should be impressed upon all cultivators that to mould the plant overmuch is injurious. It is sufficient if the growing tubers are fairly covered. Indeed, if a few are exposed and become green in consequence there is no loss entailed, for they can be saved for seed.

4, In planting on the poorest soils a distance of at least 20 inches from row to row, and of 9 inches from set to set, should be allowed. Generally speaking with land of average quality and sorts of average growth a distance of 2 feet 6 inches between the rows and of 1 foot between the seeds will be found the best. Sorts that are known to be rank in growth must have ample space allowed for the spreading of the shaws to the light and air, and with these a distance of 3 feet or even 4 feet between the rows will be requisite. So far as may be possible planting on light dry lands should be completed during the month of March, and on heavy lands during the month of April. Good crops may be expected from seed planted in May if the work is well done, but the danger of delay in the planting is that the increasing warmth of the season compels the seed to sprout unduly and thus leads to a waste of energy. Every detail of Potato culture should have in view to conserve the original vigour of the plant.

5, The sorts specially recommended for general culture on heavy soils, and for districts where the rainfall is considerable, are *Scotch Champion*, *Redskin Flourball*, *Magnum Bonum*, *Irish Cup*, *Perthshire Red*, and *White Rock*. The sorts specially recommended for light land and for districts that have a moderate rainfall are *Early Rose*, *Late Rose*, *Beauty of Hebron*, *Manhattan*, *Victoria*, *Grampian*, and *Sherry Blue*. All those recommended for heavy land may be planted on light land, but those recommended for light land should not be planted on heavy land.

6, The practice of planting small refuse seed has contributed in a most material degree to the deterioration of the Potato, not only in Ireland but throughout Europe. Any seed tuber weighing less than an ounce and a half is unfit for planting, and it is to be preferred that tubers averaging 2 to 4 ozs. should be selected. Seed that has sprouted but little or not at all is to be preferred to that which has made much growth in store.

7, The proper cultivation and improvement of the Potato may be greatly promoted by means of competitive exhibitions, at which prizes should be awarded for the best samples, true to name, presented in a clean and attractive manner. In the schedules of all agricultural and horticultural exhibitions classes should be provided for Potatoes, with a view to quicken inquiry and promote a permanent interest in the rational treatment of the plant and the selection of the most useful varieties for particular soils and climates.

8, The so-called lazy-bed system of Potato growing should be discouraged, except in cases where proximity to towns insures a ready and profitable market for early crops of small-growing sorts of high quality. The robust-habited kinds, on which alone dependence should be placed for main crops in agricultural districts, are scarcely amenable to the system which necessitates close planting and tends directly to degeneracy of the stock.—(*The Gardener's Magazine*.)

ROCKERIES.—No. 2.

IN giving as I promised a selection of plants for rockeries there are two principles by which I shall be guided—not to recommend difficult plants, for there is no reason why a beginner should break his heart over these. There is an abundance of beautiful plants of easy culture, so that it is worse than useless to try those that puzzle even experienced growers. After a while they may be attempted, but not at first. The other is to confine the list to low-growing species. The herbaceous border is more suited for the taller ones, and they do not look nearly so well on a rockery.

Acena novæ-zelandiæ is one of the very best carpet plants for a rockery; it grows very rapidly, does not interfere with other plants (I have *Saxifraga oppositifolia* running over it and blooming freely), and late in the summer is covered with curious little crimson spikelets.

Æthionema cordifolium, syn. *Iberis jucunda*, a lovely little plant, making tufts about 2 or 3 inches high with clusters of soft rosy pink flowers. It seeds very freely and is easily raised from seed. *Alyssum saxatile* var. *compactum*, rather large, but suitable for some places where more robust rock plants are grown.

The *Androsaces* are a very beautiful genus, but some of them come under the class of difficult plants. *A. lanuginosa* is, however, very free-growing and is very beautiful. It is better to cover it with a piece of glass in the winter owing to the woolly nature of its leaves.

Anemone apennina (Blue Wood Anemone), soft blue flowers. *Anemone fulgens*, *A. nemorosa plena*, *A. Pulsatilla*, *A. ranunc.*

culoides, are all very beautiful species, and do well on rock-work with very little care.

Aquilegia alpina, *A. cærulea*, and *A. glandulosa* (Grigor's variety), are all fit subjects for rockwork; but the latter, although it flourishes in Scotland, has been and is considered a difficult plant down south.

Arabis androsæcea and *A. procurrens* are the two best of the genus for rockwork. *Arenaria balearica*, a charming little carpet plant, very minute, creeping rapidly over the ground, rocks, &c., and about April covered with a multitude of small white flowers.

Armeria juncea, a Thrift with curious pincushion-like tufts, from whence arise slender wiry stems bearing a cluster of delicate pink flowers. *Asperula odorata* is very sweet-scented. Of the *Asters*, *alpinus* is about the only one suitable for rockwork. *Aubrietia Campbelliæ*, *A. græca*, and *A. purpurea variegata* are desirable plants.

Calandrinia umbellata forms dwarf clusters of magenta-crimson flowers. Of the *Campanulas* many are very suitable for rockwork, such as *C. Allioni*. It forms wide-spreading tufts filled with brilliant bluish purple flowers of extraordinary size, especially when the very dwarf nature of the plant is considered. *C. gargarica pulla*, very beautiful, *Raineri*, *turbinate* and its varieties, and *Waldsteiniana* are well worthy of a place. *Cheiranthus alpinus* and *Marshallii* are the most suitable of the *Wallflowers*. Of *Crocuses* a place must be found for the lovely *C. Imperati*, *Sieberi*, and *speciosus*, the two latter being autumn-flowering species. *Cyclamen coum*, *vernum*, and *C. Atkinsii* are most charming, appearing in the midst of snow, and long before either the *Snowdrop* or *Winter Aconite* make their appearance. There is no more beautiful plant for a moist part of the rockery than *Cypripedium spectabile*; and although its flower stems rise to 18 inches or 2 feet, yet from its habit of growth it is quite suitable for rockwork. Amongst the *Dianthi* there are some most lovely gems for the rockery. *D. alpinus* is very lovely, but is eclipsed by *D. glacialis*, and especially by *D. neglectus*. Easily grown and most free-flowering, nothing can be more lovely than a good plant of this alpine gem as I have seen it at Mr. Backhouse's at York, covered with its rosy carmine flowers. Then our own native *Cheddar Pink*, *D. cæsius*, may be added.

The quaint appearance of the *Dodecatheons* (*American Cowslips*) should insure them a place; *D. integrifolium* and *D. Meadia* are very beautiful. *Draba aizoides*, *Dryas octopetala*, should be added, and also *Erinus alpinus* for any dry part of the rockery. It seeds very freely and has to be watched, as I have seen a rockery where it completely smothered everything else, but kept in check it is quite deserving of a place. *Erysimum pumilum*, a very dwarf *Wallflower* with lemon-coloured flowers, and *Gaultheria procumbens*, a shrubby creeping hardy evergreen, are also desirable. Amongst the *Gentians* are some of the most lovely of alpine flowers, but at the same time difficult. *G. acaulis*, the *Gentianella*, is easily enough grown, and its brilliant blue flowers are well known. *G. cruciata* is also easily grown; but *G. verna*, the most exquisite of alpine gems, is very difficult, and one rarely sees it grown well except in pots. The far-famed *Ridelweiss* (*Gnaphalium leontopodium*) is very easily cultivated, and should be grown if only for its associations, but its foliage is really very beautiful. The *Helianthemums*, *Mountain Asters*, or *Rock Roses*, are very showy and easily cultivated. There are many varieties of the most varied shades of colour. The *Hepaticas* are too well known to need comment, but *H. angulosa* is the finest of the genus. *Hutchinsia alpina* is a pretty little plant. *Linnaea borealis* is a lovely little hardy evergreen, and grows in some situations freely enough. *Lithospermum prostratum* with its lovely blue flowers is very beautiful. *Mazus pumilio* is a pretty dwarf creeping plant. *Mertensia paniculata* and *sibirica* have very pretty clusters of light blue flowers. Of the *Forget-me-nots* all very pretty. The gem of all is *Myosotis rupicola*, while *M. dissitiflora* is the earliest of all in bloom. *Omphalodes verna* is a well-known early and free-growing plant with lovely blue *Forget-me-not*-like flowers. *Parnassia palustris* (*Grass of Parnassus*) is suitable for a damp situation. *Phlox Nelsoni*, *P. frondosa*, and *P. verna* are all very suitable for rockwork, and are very pretty early-flowering objects for rockwork. Amongst the *Primulas* there are several very beautiful plants all suitable for rockwork. *P. auricula marginata*, *P. erosa*, *P. farinosa* (the *Mealy Primrose*), *P. longiflora*, *P. nivalis*, *P. piedmontana*, *P. purpurea*, *P. pulcherrima*, *P. purpurea*, and *P. viscosa* are very desirable, easily grown, and quite hardy. *Raymondia pyrenaica* is a very lovely plant, rejoicing in shade,

and having large fleshy leaves. *Rosa pyrenaica* is a very lovely *Rose*.

Amongst the *Saxifrages*, *Sedums*, and *Sempervivums* there are a great many very desirable plants for the rocks. Amongst them may be named *Saxifraga aizoides*, *S. Burseriana*, *conophylla*, *S. Hirculus*, *S. longifolia*, the queen of *Saxifrages*, a very splendid *S. Mawiana*, *S. oppositifolia*, *S. pectinata*, *S. valdensis*. *Sedum acre aureum*, *S. atropurpureum*, *S. ibericum*; *Sempervivum arachnoideum*, *S. californicum*, *S. Lageri*, and *S. speciosum* are perhaps amongst the best, but there is a very large number of them. *Silene acaulis* is another alpine gem, with large dense cushions covered with pink flowers. *S. alpestris*, snow white, is very pretty. *Soldanella alpina* and *minima* are very pretty dwarf fringed flowers from the very highest portions of the Alps. *Statice alpina* is very pretty, while the Fern-like foliage of *Thalictrum alpinum* and *minus* claim for them a place on the rockery. *Thymus alpinus* and *T. lanuginosus* are also suitable, while *Triteleia uniflora* is a well-known and desirable bulb. *Tulipa Greigii* and *australis* are dwarf and pretty forms. *Tussilago alpina* is a very dwarf form of *Coltsfoot*. *Veronica rupestris* and *saxatilis* are dwarf procumbent species with bright blue flowers; while of *Viola* there are many which may be so used on the rockwork.

If any person desirous of forming a rockery begins with these he will have a good selection, and they are all, or nearly all, to be had at a low price; and when the rockery is established higher flights of new and rare kinds may be tried.—*D., Deal.*

GROWING PEARS IN UNHEATED GLASS STRUCTURES.

THIS is a subject deserving of more attention than it has as yet received, especially in our northern counties. It was brought forcibly to my mind by the admirable figure and description of *Louise Bonne* of *Jersey* which appeared in the *Journal* of February 25th, page 161. I have that variety here, also *Williams' Bon Chrétien*, *Josephine de Malines*, *Doyenné du Comice* and *Beurré Diel*, growing in an unheated house and trained to wires under the glass, the first-named variety growing outside as pyramids grafted on the *Quince* stock and as espaliers trained to wire trelliswork. In the latter case it is generally free-bearing, but the fruit will seldom average half the size of those grown under glass, and it is so entirely different in appearance that I find it difficult to convince people they are the same variety in each case. As to their relative utility, I may say that those grown under glass are prized by my employers as amongst the finest dessert Pears both for appearance and flavour which they can procure, whilst those grown outside are scarcely valued at all. Concerning their relative fruitfulness, too, I can nearly always ensure a fair crop of fruit from the trees under glass; whilst outside, with the exception of *Louise Bonne* of *Jersey*, a crop of any variety is rarely obtained. Indeed in this district pyramid Pear trees generally do not succeed, producing little besides the annual crop of wood in return for the valuable space too often monopolised by them. I think that in these northern counties cheap unheated glass structures planted with trained trees of the best varieties of dessert Pears would give more general satisfaction and yield a better return for the capital and labour expended than almost any other class of fruit houses we can erect. Also by planting the trees on each side of one of the garden walks, and building the house as a span roof over such walk, space is economised and an agreeable promenade formed for all weathers.

I am well aware that unheated houses are generally disliked by gardeners, and I am sorry to know that too often they have good cause for such dislike. Such houses have been very strongly advocated for Peaches and Nectarines (for which they are entirely unsuited in this locality) by men whose known ability and experience has induced gentlemen to follow their teaching, and to build such houses for that purpose, with the result of their being a source of perpetual trouble and discomfort to the gardener who has had the charge of them and of dissatisfaction and annoyance to the owner. I am convinced, however, that such dissatisfaction would not have occurred had the houses been planted with Pears; and when we consider the price which has now to be paid for good examples of dessert Pears and what an indispensable adjunct they are to the dessert, I am inclined to believe that the value of a house filled with a selection of the best varieties would be even

greater than the same house containing a good crop of Peaches and Nectarines.

In this district Pears outdoors will be again very scarce in the coming season, as owing to the wet and cold summer and autumn of last year the trees have formed scarcely any flower buds. Indoors, although the trees last year carried exceptionally heavy crops and matured them finely, there is again a fair show of bloom just ready to open, and I have little doubt but that they will again produce some fine fruit. I find that the trees require liberal supplies of weak liquid manure during the time the fruit is swelling; and they require but little pruning, as owing to their carrying so much fruit and the wood they make ripening so well, there is but little surplus to cut away. As to the varieties suitable, I would at once say any or all of the choicest and largest varieties; but I would especially recommend Louise Bonne of Jersey, Marie Louise d'Uccle, Williams' Bon Chrétien, Duchesse d'Angoulême, Beurré Diel, and Doyenné du Comice. The house may be lightly and cheaply built, and must have abundant facilities provided for giving a free circulation of air all through the trees, which they will require at nearly all stages of their growth. I think, too, that training the trees to wires immediately under the glass is much to be preferred to growing them as bushes or in pots, as we often see them in such houses; in the case of the trained trees the fruit being more abundant and very much finer.—W. K. WOODCOCK, *Sheffield*.

ROYAL HORTICULTURAL SOCIETY.

MARCH 23RD.

RARELY have we a more satisfactory and interesting meeting to record than on this occasion. The exhibits were not nearly so numerous as is usually the case, but they were of such extraordinary dimensions that the collections from three exhibitors occupied one entire side of the conservatory. Very few plants were staged in the Council-room, and these were ultimately removed to the conservatory, where the other exhibits were arranged on tables down each side of the central path. Hyacinths were extremely numerous, the combined collections of Capt. Patton and Messrs. Veitch, Osborn, and Cutbush numbering over eight hundred, including all the best varieties in cultivation. The effect produced by the diversified colours of these plants, and the tastefulness displayed by the exhibitors in arrangement, awakened considerable admiration on the part of the visitors. The other great feature of the meeting was Messrs. Veitch's gigantic collection of Amaryllises, which occupied nearly a fourth of the entire staging, and comprised more than three hundred plants, a large number of varieties being represented, many new and of great excellence. Messrs. Williams' and Bull's Orchids, and the remarkably beautiful group of plants from the General Horticultural Company arranged in Mr. Wills's artistic style, all combined to impart considerable pleasure to the numerous visitors that assembled during the afternoon.

FRUIT COMMITTEE.—Henry Webb, Esq., in the chair. A collection of plants were exhibited by Dr. Siemens, showing the effect of electric light on vegetation. There were three pots of Carrot roots, three pots of Mustard, and two flowers of *Calla sethioptica*. One of each of the two former were subjected to continuous electric light, one to daylight and electric light, and one to daylight only. In the case of the Carrots the advantage was clearly in favour of continuous electric light, but in the case of the Mustard there was no perceptible difference between equal electric and daylight and daylight only, except that the former was a shade darker in colour; but in the case of electric light only the effect was very inferior to either of the former. In the case of the flowers of *Calla* the difference was very perceptible; that which was produced under the influence of the electric light being fully expanded, while the other which was exposed to daylight only was only partially so. Unusually fine examples of *Vanilla* were exhibited by Mr. T. H. Sutton, The Gardens, Work-sop Manor, Notts, which deservedly received a cultural commendation. A dish of Mickleham Pearmain Apple was exhibited by Mr. J. Burnett, Deepdene Gardens, Dorking; and a collection of Apples and Pears was exhibited by Mr. G. Goldsmith Hollander, Tonbridge, and received a letter of thanks.

FLORAL COMMITTEE.—Dr. Denny in the chair. The chief part of the Committee's duties lay in the conservatory, for there were few new plants exhibited. As we have indicated the general appearance of the display we may now briefly describe the individual exhibits.

Messrs. Veitch & Sons, Chelsea, contributed two large collections of plants, one comprising about 120 Hyacinths in superb condition, unquestionably the finest of all those exhibited. Two new forms were awarded first-class certificates—namely, Queen of the Yellows and Cavaignac, which are described in another column, where also the names of the best varieties in the collection are recorded. The Amaryllises we have already referred to, and it only remains to

note the following, for which first-class certificates were awarded. *Empress of India*, a handsome variety with flowers of great size (about 8 inches in diameter), symmetrically formed, of a rich scarlet colour with a narrow white stripe down the centre of each division of the perianth; four flowers were borne on each scape. *King Arthur*, a very distinct and neatly formed variety. The flowers were somewhat circular in outline, the ground colour being a greenish white peculiarly streaked and mottled with crimson round the margin of the perianth divisions. *Storr's Beauty*, a smaller flower than the other varieties, but of good form and rich deep scarlet, each scape bearing three flowers. For the Hyacinths a silver Flora medal was awarded, and for the Amaryllises a large gold Banksian medal.

Captain Patton, Abbey Road, St. John's Wood (gardener, Mr. Boulton) staged an enormous collection of Hyacinths, numbering nearly four hundred plants, and including a large number of varieties. They were well grown and fairly well arranged, but the exceptionally deep pots were a great disfigurement, although they were partially concealed in the front row by a margin of *Isolepis gracilis*. The centre of the group was occupied with some good Tulips in rather large pots, and Lilies of the Valley in pans. The background was composed of *Dielytras* and *Spiræas* arranged alternately, and produced a most delightful effect, the specimens being exceptionally fine, upwards of 8 feet across. Both were excellently flowered, indeed finer plants were never exhibited. A very neat label was employed which is deserving of notice. A small wire clip held a card about 8 inches long by 2 wide, with a narrow gilt margin, and on this the names were written in an extremely elegant hand. For this handsome group a gold medal was deservedly awarded. Messrs. W. Cutbush & Son, Highgate, were adjudged a silver Banksian medal for a group of Hyacinths, Tulips, and Lilies of the Valley, the colours of the former being very good and well arranged. The Hyacinths included many handsome varieties, but they were the same as those noticed in another portion of the Journal, and therefore need not be specified. Messrs. Osborn & Son, Fulham, were awarded a silver Flora medal for groups of Hyacinths and Tulips. They staged about two hundred handsome Hyacinths, the varieties being well selected, and their general condition extremely good. About sixty Tulips were exhibited, and a group of miscellaneous flowering and foliage plants.

One of the largest and most attractive groups of miscellaneous plants was that from the General Horticultural Company (Limited), Mr. John Wills, manager. This comprised a great number of plants, including Orchids, Ferns, flowering plants, Palms, and Crotons. It was especially noticeable for the diversified style of arrangement adopted, remarkably distinct from the formality which usually characterises groups of this description. *Adiantums* and choice Orchids were most charmingly intermingled, *Salagnella Krassiana* and *Isolepis gracilis* forming an agreeable margin. A number of Liliacs were also introduced with a very pleasing effect. A large gold Banksian medal was accorded for this elegant group. Mr. W. Bull of Chelsea exhibited a large number of Orchids, Palms, and Cycads, including many of great beauty and rarity. The delicate little *Odontoglossum membranaceum* was represented by a specimen bearing several of its prettily marked flowers; *Anguloa Clowesii* had two of its fine yellow fragrant flowers; *Odontoglossums* were also numerous, such species as *O. triumphans*, *O. cirrhosum*, and *O. Alexandræ* being in fine condition. Many *Cattleyas*, *Lycastes*, and other well-known Orchids assisted in forming a highly attractive collection. The double *Epacris oenomeiflora*, which we have noticed on several previous occasions, was again exhibited in good form. It is an excellent plant either for decorative or cutting purposes. A gold medal was awarded.

Mr. B. S. Williams, Upper Holloway, sent a collection of Orchids, including *Cypripediums*, *Odontoglossums*, *Cattleyas*, *Lycastes*, and *Coclogynes* in excellent condition. *Cattleya amethystoglossa* was especially noticeable, one raceme bearing about two dozen large flowers. Nearly three dozen Amaryllises were shown, several of the varieties being noticeable for their brilliancy of colour, particularly *Grandidens*, *Firefly*, *Ackermannii pulcherrima*, and *Princess Dagmar*. *Loveliness* is also a pretty variety, the flowers being white streaked with crimson. A first-class certificate was accorded for *Amaryllis Exquisite*, a beautiful variety. Four large flowers were borne on one scape, of great substance, symmetrical form, and bright scarlet colour, with a clear band of white down the centre of each petal. A cultural commendation was awarded for *Imantophyllum miniatum* Martha Reimers, one scape bearing about thirty richly coloured flowers. For the group of Orchids a silver Banksian medal was accorded. Messrs. Carter & Co., High Holborn, exhibited plants of the certificated varieties of *Cyclamen* raised a year or two ago by Mr. H. B. Smith of Baling—namely, *Rosey Morn*, Duke of Connaught, Queen of the Belgians, and *persicum picturatum*, all extremely fine varieties both in colour, floriferousness, and size of flowers. Mr. H. B. Smith, Baling Dean Nursery, also exhibited a superb collection of *Cyclamens*, including two or three hundred fine plants in 48-size pots. They were all characterised by the vigour, size, and substance of flowers for which Mr. Smith is so noted. A silver Banksian medal was awarded. Mr. Aldous, florist, Gloucester Road, obtained a silver

Banksian medal for a group of Cinerarias, Spiræas, Heaths, Ferns, and Palms, together with two handsome bouquets, one entirely composed of Roses, and the other of Roses, Orchids, and Eucharises. Mr. Greenfield, The Priory Gardens, Warwick, obtained a certificate for an excellent double Cineraria named Mr. Thomas Lloyd; the heads were nearly globular in form, of a deep purplish blue colour. Messrs. Jackson & Son of Kingston exhibited several Primulas, notably *P. rosea* and a pretty variety of *P. denticulata*. The peculiar *Arisæma speciosum*, referred to last week on p. 217, was sent from the Society's Chiswick garden.

DURING the afternoon Mr. Shirley Hibberd, on the invitation of the Council, delivered an excellent lecture on the history and characteristics of the Hyacinth and Amaryllis, compiled from the works of the "grand old masters, who produced books that put to the blush the puny productions of the modern horticultural press." From the writings of Gerarde, Parkinson, Lyte, and Miller he gathered much of interest relative to this popular flower, "which once mustered two thousand named varieties, but now probably reduced to a thousand, from which the lecturer observed, and we agree with him, "seven hundred might be eliminated without serious loss." The Amaryllis, or, as Mr. Hibberd observed, more properly the Hippeastrum, was also briefly referred to.

THE POLYANTHUS.

THE Polyanthus is one of our early spring flowers, and in consequence is a special favourite, for after a dreary number of months all flowers are hailed with delight.

It is to be regretted that this flower is so much neglected, and why it should be is a mystery. If not equal to the Auricula yet it has special attractions, the shining gold-laced petals having a very pleasing effect. I have never been able to trace the time of the appearance of the Polyanthus or its origin, yet there is no doubt its first parent was the Primrose, from the seed of which an Oxlip was produced. This by careful cultivation produced the Cowslip, and from this arose the Polyanthus. Again the improvement was very slow. There are but few new varieties of modern times, and during fifty years scarcely any that will bear comparison with the original varieties. There is one, raised about forty years ago by a Cheshire Gooseberry grower, named Cheshire Favourite; but although it probably has the most brilliant of colours yet it has a serious defect—the lacing does not always cut through, which in all first-class varieties it should. It would be worthy more attention of all amateurs, who should try by a little perseverance in crossing to produce something first-rate. If I were a grower I should endeavour to obtain seed either from Page's George IV. or Cheshire Favourite, and if the two could be amalgamated there is a probability of something new and good. Many of the Polyanthuses, such as Lord John Russell, Lord Ranelagh, and one or two more, have small flowers. Cheshire Favourite is a medium-sized flower, and George IV. the largest.

I never could raise a good one from seed, and this arises from not having a knowledge of crossing; by fertilizing one with the other probably there would be a blending of the two. The Polyanthus does not seed freely, and also when raised from seed a very large portion comes what is termed "pin-eyed." This summer I saw a bed of one variety of Polyanthus, every one of which was pin-eyed, which if it had been thrum-eyed would have ranked high, as it possessed nearly every requisite for a fine variety. Although there were nearly a hundred plants blooming well, yet the pods did not produce a single seed. The bees do not appear to be attracted by the blooms; although I grew a bed of 28 yards long I very seldom gathered any seed. A friend of mine purchased a 5s. packet, sold as gathered from the best varieties, and in two beds of several yards long there was not the least sign of one worth growing except as a border flower. In the cultivation of the Polyanthus a rich soil is requisite, and the bed should be so situated as only to be exposed to the morning sun. If too much exposed the plants will flag very much, but will recover in the evening. In too sunny an aspect there is great danger of red spider, which is one of the greatest pests to the Primula tribe. If it gets amongst them a few days will suffice to destroy all the plants. This I have experienced to my great loss.—JOHN SLATER, *Cheadle, near Manchester.*

STRAWBERRIES IN AMERICA.—In a very interesting article in one of the last numbers of "Scribner's Illustrated Magazine," I find a white Strawberry called "Lamig's White" thus referred to—"It is beautiful and delicious, and so aromatic that a single berry will perfume a large apartment." Would not this

be worth the notice of Strawberry connoisseurs in this country? Of red Strawberries, after discussing those in cultivation north and south, the writer gives the palm to President Wilder. He strongly recommends mulching, and is a warm advocate for bone-meal manure.—W. J. M., *Clonmel.*

[Bicton Pine answers to the description of Lamig's White.]

ROYAL BOTANIC SOCIETY.

MARCH 24TH.

THIS was the first spring Show of the year, and a large number of plants were exhibited, rendering the display highly attractive. The bulk of the exhibits were the same as those at Kensington on the previous day—namely, the collections of Hyacinths and Amaryllises from Messrs. Veitch & Sons, Osborn, and Cutbush; the Orchids from Messrs. Williams and Bull; and Capt. Patton's great collection of Hyacinths. Many other miscellaneous exhibits also contributed to the brightness of the Show.

Bulbs constituted the chief feature of the competition, but the entries were not very numerous. In the nurserymen's class for twelve Hyacinths Messrs. Gregory & Evans, Longlands Park, Sidcup, were first with fine specimens of Koh-i-Noor, King of the Blues, Lord Derby, La Grandesse, De Candolle, Macanlay, Kent Blue, and Primrose Perfection. Messrs. Osborn & Son, Fulham, were second with a collection nearly equal in merit; Messrs. Cutbush & Son, Highgate, being third with fair plants. In the corresponding amateurs' class Mr. James Douglas, gardener to F. Whitbourn, Esq., Loxford Hall, Ilford, was first with excellent specimens of Lord Derby, King of the Blues, Gigantes, De Candolle, Koh-i-Noor, Mont Blanc, Vurbak, La Grandesse, Charles Dickens, Macanlay, and Grandeur à Merveille. Mr. W. Moorman, gardener to the Misses Christy, Coombe Bank, Kingston-on-Thames, was a close second with very good plants; Captain Patton, Langford Place, N.W., being a good third. Tulips were also well represented. In the nurserymen's class for twelve Messrs. Gregory & Evans were first with Proserpine, Joost Van Vondel, Vermillion Brilliant, and Keyzers Kroon. Messrs. Cutbush & Son were second with dwarf and good specimens, and Messrs. Osborn & Son third. In the corresponding amateurs' class Mr. Douglas obtained the first prize for very good plants of White Joost Van Vondel, Proserpine, Keyzers Kroon, and Vermillion Brilliant. Captain Patton was a close second with the same varieties. Mr. James Weir, gardener to Mrs. Hodgson, Hampstead, was third also with good plants. In the class for twelve pots of Narcissus Mr. Douglas obtained the premier prize with good specimens of Queen of the Netherlands, Grand Monarque, and Gloriosa; Messrs. Cutbush & Son, being second with nearly equally good plants. For six pots of Lily of the Valley Messrs. Cutbush & Son were first with excellent clumps bearing many good scapes. Mr. Douglas was second with not nearly such well-flowered specimens, and Mr. Moorman third. Mr. J. Wiggins, gardener to H. Little, Esq., Hillingdon Place, Uxbridge, obtained the first prize for the only collection of Amaryllises with excellent plants of good varieties. Captain Patton was placed first with twelve pots of Crocuses, well selected and flowering freely, the only exhibit in that class.

The only collection of six forced Roses came from Messrs. Paul and Son of Cheshunt, for which the first prize was adjudged. Good specimens of La France, Madame Lacharme, Anna Alexieff, Duke of Edinburgh, Comtesse de Serenye, and Alba Roses were shown, the flowers being of fair size and form. Mr. Douglas staged the only collection of six Deutzias, and was awarded the first prize for very large and well-flowered specimens more than 3 feet in height. In the open and amateurs' classes for twelve Cyclamens Mr. Wiggins was the only exhibitor, and he secured the first prize in each with vigorous and well-flowered plants. Chinese Primulas were well shown by Messrs. Gregory & Evans, who obtained the first prize for six large plants of *P. sinensis fimbriata rubra* and *alba*, some bearing eight or nine trusses of flowers. Mr. Wiggins was second with smaller but well-grown plants. Mr. Douglas exhibited the only collection of six hardy Primulas, and was awarded the first prize for pretty plants of *P. Munroi*, *P. veris platypetala*, *P. veris Purity*, and others. The *Asaleas* and greenhouse plants were not of average excellence. The chief prizes were secured by Mr. Wheeler, gardener to Lady Goldsmid Regent's Park, and Mr. Batty, gardener to B. Thornton, Esq., The Hoo, Sydenham.

The miscellaneous exhibits were numerous and generally good; extra prizes were awarded to the following:—To Messrs. Veitch and Sons, Chelsea, for a group of 150 Hyacinths including the best of those staged at Kensington, all in excellent form and tastefully arranged, and a fine group of Amaryllises comprising over a hundred specimens. To Mr. B. S. Williams, Upper Holloway, for a handsome collection of Orchids and Amaryllises, forming a very bright and attractive group. To Messrs. Osborn & Son, Fulham, for a collection of 180 Hyacinths and about 80 Tulips all in excellent form. To Mr. W. Bull, Chelsea, for a large collection of Orchids and new plants, constituting a very beautiful group. To Mr. Wiggins for a collection of small Cinerarias, comprising a number of excellent varieties. To Messrs. Paul & Son, Cheshunt,

for a good collection of Roses in pots. To Captain Patton for a handsome group of Hyacinths, Dielytras, Spiræas, and Tulips, tastefully arranged. To Messrs. Wm. Paul & Son, Waltham Cross, for six fine boxes of Camellias. To Messrs. Gregory & Evans for a group of excellent Cinerarias and Pelargoniums. To Mr. B. Smith, Ealing, for a large collection of well grown and flowered Cyclamens. Messrs. W. Cutbush & Son staged a neat and elegant group of *Cocos Weddelliana* and Lilies of the Valley intermixed, also about eighty handsome Tulips.

NOTES AND GLEANINGS.

THE Scientific Committee of the ROYAL HORTICULTURAL SOCIETY, having appointed a Committee to collect evidence and report on the effect of the past severe winters and cold summer on trees, shrubs, and plants, will be glad of the co-operation of all horticulturists interested in the subject, whether members of the Society or not. Forms are in preparation for filling up, and may be had on application to the Secretary, South Kensington.

AT a general meeting of the ROYAL HORTICULTURAL SOCIETY held last Tuesday, H. J. Elwes, Esq., in the chair, the following candidates were duly elected Fellows—viz., George Banbury, George Walter Davidson, Major R. G. Ellison, Mrs. Arthur Howell, Captain Aubrey Q. Patton, Miss Reeve, W. H. Tuck, Mrs. Martin Ware, and Mrs. Wilson. Dr. Masters, F.R.S., made a few remarks on some specimens of *Arum* grown by the aid of the electric light and exhibited by Dr. Siemens, F.R.S., and Mr. Shirley Hibberd delivered a lecture on Hyacinths and Amaryllises.

THE ABSENCE OF RAIN during the present year is noteworthy, as up to the present date only about 3 inches have been registered in the London district, and during the present month only slightly over half an inch. The land in consequence is in a dry state, and great progress has been made in digging and cleaning it, so that the arrears incident to an early and prolonged winter have in a great measure been brought up. The main roads leading out of the metropolis are covered very thickly with dust, and the hedges and trees adjacent are as white as in dry weather in summer. For land-working and seed-sowing the absence of rain has been most favourable, but a shower now would be welcome, especially to those who have been engaged in planting shrubs and Conifers, much of which work is still in progress; and nurserymen, we are glad to learn, have lately experienced a great pressure of business.

THERE is now, and has been for several weeks, a beautiful display of ORCHIDS at Mr. B. S. Williams' nursery, Upper Holloway. The genus *Dendrobium* is well represented by a number of the most attractive species and varieties in cultivation. Those in the best condition at the time of our visit were *D. tortile rosea*, *D. Lindleyanum*, *D. macrophyllum giganteum*, *D. primulinum*, and *D. Johannis*, all possessing the characteristic beauty of this handsome genus. The elegant and fragrant *Dendrobium glumaceum* fills a house with its delicious but quite undecipherable odour. *Cattleya amethystoglossa* and *C. Ruckeri*, *Cymbidium eburneum*, *Leptotes bicolor*, *Angraecum sesquipedale*, *Lælia*, and *Lycastes* are all flowering freely, some of the last-named being very richly coloured. A specimen of *Coclogyne ocellata maxima* is bearing 105 fine flowers, while the grand pieces of *Cypripedium villosum* referred to a week or two ago are now bearing their fully expanded flowers, one specimen having over two dozen. *Odontoglossums* are also flowering well.

A CORRESPONDENT observes that *CHRYSANTHEMUM CORONARIUM* proved to be one of the best annuals for window boxes last summer, and further as one of the most effective plants under trying circumstances where *Pelargoniums* failed to succeed.

THE thermometer near Newcastle-on-Tyne has recently registered 5°, 6°, and 8° of frost, accompanied with cutting east winds. Hitherto the weather has been fine, and all outside work is well advanced. On Saturday morning last a dense fog prevailed, such as is seldom seen in the north, but more resembling London in November.

A CORRESPONDENT informs us that the WEATHER IN IRELAND has been very fine for all outdoor work during the past week with a keen cool north-easterly breeze, the sunshine modifying their influence. The mean temperature has been about 46° Fahr., which is 4° above the average, though the minimum night temperature descended within two degrees of

freezing point on the grass. Though the ground seemed thoroughly saturated a week since it is now in fine workable condition.

THE following HORTICULTURAL SOCIETIES will hold their annual exhibitions on the undermentioned dates:—Croydon, June 30th; Clevedon, August 4th; Reigate Rose Show, June 26th; Hants and Berks (Portsmouth), from June 22nd to the 25th; Ramsgate, August 25th.

IN Sir Henry Peek's gardens at Wimbledon House Mr. Ollerhead has been extremely successful in growing the two fine *ODONTOGLOSSUMS ROEHLII* and *VEXILLARIUM*. The growths of the plants are unusually vigorous and the pseudo-bulbs fine, and the first-named species has produced spikes bearing four flowers. There are many plants of both species, and all are in the most satisfactory state. They are in 4-inch pots plunged in sphagnum in perforated earthenware baskets suspended from the roof of a house having a night temperature of about 60°. *Dendrobium primulinum giganteum* in the same collection was in splendid condition, the flowers being very large and beautiful. We recently noticed a very fine pure white variety of this excellent species in the collection at Coombe Cottage, which is deservedly cherished by the skilled cultivator Mr. Baker.

THE schedule of the THORNTON HEATH HORTICULTURAL SOCIETY for 1880 has been issued, and contains many improvements in respect to the rules and classes. A number of special prizes are offered, including some from Messrs. B. S. Williams, W. Paul & Son, James Carter & Co., Daniels Bros., Hooper & Co., John Laing & Co., and Sutton & Sons. Mr. L. Hakeman has been elected Honorary Secretary in the place of Messrs. Gooch & Atterbury, who have resigned. The fourth annual Exhibition will be held in the grounds of K. T. Oelrichs, Esq., Elm House, Thornton Heath, on August 18th.

IN the stove at Woolton Hall *ODONTOGLOSSUM ROEHLII* is growing most vigorously, having foliage 15 inches long and 1 inch wide, while the bulbs are 3½ inches long. Two growths are now producing four spikes bearing twelve flowers. *Odontoglossum vexillarium* grows equally strong in the same house. *Hexacentris mysoensis* is carrying between thirty and forty spikes of its rich yellow and crimson flowers. This is a fine stove or intermediate house climber.

THE date of the WEST OF ENGLAND ROSE SOCIETY'S SHOW is fixed for July 7th. The Exhibition will as usual be held at Hereford, and with a favourable season will equal if not surpass the grand displays of past years. The Rev. C. H. Bulmer, Credenhill Rectory, is the Honorary Secretary.

THE usual monthly meeting of the METEOROLOGICAL SOCIETY was held on Wednesday, the 17th inst., at the Institution of Civil Engineers, Mr. G. J. Symons, F.R.S., President, in the chair. Sir A. P. Bruce Chichester, Bart., W. H. Cochrane, Rev. H. Garrett, M.A., H. Jonas, J. Lingwood, Lieut.-Col. L. W. Longstaff, Rev. C. E. Sherard, J. H. Stewart, and Dr. W. J. Trentler were balloted for and duly elected Fellows of the Society. The following papers were read:—1, "Thermometric Observations on Board the Cunard R.M.S.S. 'Algeria,'" by Capt. William Watson, F.M.S. 2, "On the Greenwich Sunshine Records, 1876-80," by William Ellis, F.R.A.S. At 8 P.M. the discussion was suspended in order to afford the Fellows an opportunity of inspecting a large number of new and interesting meteorological instruments which had been brought together for exhibition.

THE Committee of the REIGATE ROSE ASSOCIATION have decided to give prizes for Hybrid Teas, making the Cheshunt Hybrid the standard of the class. That good and useful flower the Committee thought had been rather unfairly treated by the National Rose Society, and hence their decision—arrived at not only because of the merits of the variety in question, but to encourage the production and culture of other varieties of the same type.

A LINCOLNSHIRE clergyman has sent us sprays for identification of a Holly, *ILEX GLABRA*, that he informs us has endured the severe frost of last winter better than any other shrub in his garden. The shrub is of dwarf yet free growth, and has large bright glossy leaves and prominent spines. It is bold and attractive in appearance, and is well adapted for planting in cold northerly localities.

WE have before spoken approvingly of CLAY'S FERTILISER, but inquiries continue to reach us relative to its merits. We have tried it on various plants, vegetable crops, Strawberries, and Vines, and find it an excellent manure, quick in

its action and lasting in its effects. No better proof of the value of this fertiliser can be adduced than the fact that it is regularly employed by the leading florists who grow plants for the London market, and who would not adopt it if they did not see a return for the outlay invested. It is also used by some of the principal nurserymen, and has won for itself a high reputation as a valuable aid to cultivators generally.

COTTAGE GARDEN SHOWS.

I WAS very pleased to see the remarks of "A YORKSHIRE CURATE" at page 191 on this subject. From experience I am convinced that societies of this kind when well managed are very beneficial in any parish. The parish of Margam, although large, is not densely populated, most of the inhabitants being scattered about as in other agricultural and mountain districts; but that a cottage garden society can be kept up successfully even in such a parish with much interest to all concerned, might induce those living in the most remote districts to start something of the kind. When Mr. William Thomson started a society of the kind at Clovenfords some ten years ago, it was just about as unlikely a place for it to succeed, so far as population was concerned, as any part one could think of, yet that society is now, as it always has been, in a very flourishing condition. I merely state this to show those who may think there are not enough people in their parish, that their ideas in this way may be wrong. As showing how we progress and spend the money of the Margam Cottage Garden Society, I give the statement of accounts for 1879, and I will be glad to send anyone thinking of starting a society of the kind a list of our prizes and arrangements for 1880. The only thing to be guarded against in beginning at first is to keep down the expenses until a surplus is obtained, and arrange it that the expenditure may never exceed the income. In 1878 we only gave £18 odd in prizes; in 1879, £21 16s.; and for 1880, as our funds increase, about £30. In this respect I think some of the large societies might advantageously take an example. Getting up a grand display at the commencement with no certainty of having enough money to pay for it has ruined many societies, when the precaution of starting in a small way might have placed them on a firm and lasting basis.

MARGAM COTTAGE GARDEN SOCIETY, 1879.

RECEIPTS.	£	s.	d.	EXPENDITURE.	£	s.	d.
Cash in hand from 1878	20	6	6	Paid in Prizes	21	16	0
Subscriptions for 1879	34	16	0	Band	5	10	0
Taken at Show Gate	13	13	10	Printing	5	18	0
Interest at Bank	0	16	8	Advertising	1	1	0
				Judges	1	5	0
				Doorkeeper	0	5	0
				Stationery	0	5	0
				Postman	0	2	6
				Balance in hand	26	9	6
	£68	12	0		£68	12	0

—J. MUIR, Hon. Sec., Margam, Tŷbach, S. Wales.

PENTSTEMONS AND ANTIRRHINUMS.

ALTHOUGH last year was a bad one for the majority of bedding plants these two succeeded well with me, the blooms lasting from July till November, and during the whole of that time they were not only attractive but very serviceable for cutting. A large flower bed edged with Box, containing about 140 plants of Pentstemons of various colours planted a foot apart each way, was a mass of flower all the summer and autumn months. The plants were from cuttings struck in the previous September in a cold frame, and in which they remained during the winter. When planted out in April the points of the shoots were pinched out. They may be raised from seed sown in heat in February, and the plants should be well hardened before placing outside; but if the seed is sown even now the plants may be had in bloom by next September and October, when cuttings may be taken from the shoots that arise near the base of the best plants, and in that way may be perpetuated.

The Antirrhinum or Snapdragon is more common, but there are now many beautiful varieties. The dwarf Tom Thumb varieties I find the most useful for bedding, and these may be raised easily from seed sown in March, and when 5 or 6 inches high and well hardened off they can be planted out. The numerous spotted and striped flowers belonging to this section render them useful for cutting; two or three dozen planted in

the kitchen garden will furnish a large supply often till near Christmas. They look very well in masses as bedding plants, but beds that are edged with Box, with gravel walks intervening, suit them better than beds on grass. Dry weather, too, does not affect them as it does some other plants, for I have seen them many times on brick walls growing and flowering well with no other support than that derived from the atmosphere and the interior of the wall. They may be raised from seed sown annually, but if a few old plants stand the winter they will bloom before the young plants.—A. HARDING.

FRUITS FOR SCOTLAND.

I HAVE been expecting every week since the subject of Pears was started in the Journal, that some from Scotland would give us their experience of the various kinds figured, but as yet all are silent. I am sure many would consider it a great boon if those who have grown the varieties already discussed would state their opinion of them, for there are so many fruit trees which do well in England that will scarcely bear at all in Scotland.

I had occasion to plant a number of fruit trees in Ayrshire twelve months ago quite close to the sea, in a very light sandy soil, but they were planted in loam that had been carted some distance. There was great difficulty in selecting suitable varieties as I wished to grow for profit, but my best guide was "The Miniature Fruit Garden" by Thomas Rivers. Yet with all the information given in that excellent work, I fear some of my varieties are rather tender. The following are my varieties, and I should consider it a great favour if those who have grown them would state their opinion of them.

Against both south and north aspects Victoria Plums were planted, with a few of the following:—Bryanston Green Gage, Coe's Golden Drop, Early Prolific (Rivers), Green Gage, Jefferson, and Pond's Seedling. Southern and western aspects I also planted a few Apples and Pears. Apples.—Cox's Orange Pippin and Ribston Pippin. Pears.—Williams' Bon Chrétien, Louise Bonne of Jersey, Jargonelle, Pitmaston Duchess, Duchesse d'Angoulême, and Glou Morceau.

As pyramids. Apples.—Blenheim Pippin, Cellini, Dume-low's Seedling, Ecklinville Seedling, Red Hawthorned, White Joannet, Lord Suffield, Worcester Pearmain, Cox's Orange Pippin, Kedleston Pippin, Kerry Pippin, Ribston Pippin, Stirling Castle, Irish Peach, Scarlet Nonpareil, Small's Admirable, Maltster, Warner's King, and Winter Peach. Pears.—Bergamotte Esperen, Beurré d'Aremberg, Beurré d'Amanlis, Williams' Bon Chrétien, Citron des Carmes, Doyenné du Comice, Doyenné d'Été, Louise Bonne of Jersey, Marechal de Cour, Marie Louise, Thompson's, Jargonelle, Zéphirin Grégoire, and Winter Nelis. Plums.—Green Gage, Jefferson, Victoria, and White Magnum Bonum. Strawberries.—Bountiful (New), Elton Pine, Vicomtesse Héricart de Thury, Keens' Seedling, Ne Plus Ultra, and President. Gooseberries.—Glenton Green (a name I cannot find in most English catalogues), Crown Bob, Ironmonger, Lancashire Lad, Law's Royal, Sulphur, Red Warrington, and Whitesmith.

Owing to my soil being so light, I have mulched around every tree this spring, and the trees all show a quantity of fruit buds (as they are principally extra-sized fruiting trees), so I expect some results this season. I may say that the Victoria Plum is what I am depending mostly upon, as I have it against both south and north walls, and a large number as pyramids.—G. T. P.

TRACHELIUM CÆRULEUM.

THIS old plant, although very free-flowering and easily grown, is seldom seen in our gardens, nevertheless it is worthy of a place in the largest collections. It is invaluable for greenhouse and conservatory decoration during the summer and autumn months, and when arranged on a stage along with Zonal Pelargoniums it has a fine effect, the flowers being of a soft blue colour. It is likewise very useful for drawing-room stands and vases when grown in small pots. Propagation is effected either by seeds or cuttings. To have bushy plants 18 inches high and as much in diameter in 4-inch pots in July, seeds should be sown in February in a temperature of about 60°, employing a compost of about equal parts loam, leaf soil, and sand. When the seedlings are large enough they should be pricked into a pan, employing a similar compost, and return them to the same temperature, placing them on a shelf near to the glass. In the course of a few weeks they

will require to be potted singly in pots 3 or 4 inches in diameter, proportionate to the size of the plants, using a compost of three parts light fibry loam to one part of cow dung and leaf soil, with sufficient coarse sand to keep the whole open. When the roots have obtained a good hold of the new soil the plants should be gradually exposed to more air, always keeping them as near to the glass as possible to induce a dwarf habit. As soon as they begin to branch and show flower liquid manure should be supplied at every watering, which will greatly assist in producing fine heads of bloom. Seed sown now produces good plants for decoration in late summer.

Cuttings may be struck at any time where a little bottom heat can be secured, and afterwards treated like seedlings. If extra large plants are wanted they should be cut back after flowering, repotted, and wintered in a temperature of about 50°, but I find young plants in 6-inch pots large enough for ordinary decorative purposes.—R. O. D.

PEACH PRUNING.

As Mr. Luckhurst still continues to steer wide of the issue raised by himself, I have only to say that his speculations, for they are nothing more, regarding the ultimate ill effects of the extension system are entirely imaginary. He deals with fancies, I deal with facts. I spoke of the examples of the extension system to be seen at Floors Castle among other places; and I refer to the same place again because the plan has been in operation there for nine years on a large scale. Here are the results as described by Mr. Coleman, a pretty good judge, in two of your contemporaries a short time back—"The trees, trained upon the extension principle, seem to have made equal progress, which must have been as rapid as it is satisfactory, the vigorous short stems presenting the appearance of twenty years' growth; and the trellis in each house, 45 feet by 12 feet, being evenly and entirely filled with bright short-jointed shoots bristling with blossom buds of the most promising character." This is only one example of what many cultivators are doing quite as well, and is a sufficient commentary on Mr. Luckhurst's predictions of disease and exhaustion which are sure to follow the system. Such facts as these cannot be explained away, and those who do not approve of the system would do well to be cautious in their utterances, and not commit themselves too decidedly to opinions and practices which a few years hence they will probably find intelligent cultivators generally repudiating.—J. S. W.

WHEN good cultivators, such as Mr. Luckhurst and "J. S. W." no doubt are, differ on a point of practice, there are a great number of readers who are more likely to be perplexed than instructed by their writings, unless a means of reconciliation can be effected in their statements. This, I think, is not difficult. On page 162 "J. S. W." states—"I wish it to be clearly understood that the extension system can only be followed out successfully under conditions in which the young wood can be matured; under no other circumstances has the system been recommended." Mr. Luckhurst has forgotten this important qualification. Under conditions other than those named he is right, but given these conditions "J. S. W." is right. I have adopted both modes of pruning with success. If the wood is strong and well matured to the point why shorten it? The superfluous growths removed entirely—thinned out—are always succeeded by fresh growths starting from near the point of severance, and the trees are kept well furnished. The whole question resolves itself into one of ripening or non-ripening of the wood; or as Mr. Luckhurst observed last week—"The condition of each tree is our best guide for the treatment of it alone, and not for the whole of the trees." As a rule the system of pruning recommended by the last named cultivator is the best for trees grown outdoors, while that of "J. S. W." is well adapted for trees trained to trellises under glass. Under such conditions I think a greater quantity of fine fruit can be had in a given time from the planting of the trees when pruned on what is termed the extension system than by any other mode of pruning, but the plan would not answer if the growth were not matured.—AN OLD CULTIVATOR.

ADDER'S-TONGUE FERNS.—I should thank Mr. Roberts very much for a plant of the *O. vulgatum* var. *ambiguum* for growing, and also "DUBLINENSIS" for a plant of *O. lusitanicum*, to grow them side by side, so that I can see if there is really

any difference between the two plants—whether they are species or varieties, or only starved or merely deformed forms of the normal species, which I have growing here by the thousand. Probably "DUBLINENSIS" might get a plant of *O. vulgatum* var. *ambiguum* from Mr. Roberts. About three years ago I received from Mr. Curnow a parcel of dried plants named, with the localities and dates of collection. Among them was an unnamed *Ophioglossum*, which I took without hesitation to be *O. lusitanicum*. I at once wrote to Mr. Curnow for a label with the name, locality, and date of collection. Mr. Curnow, replying to my note, said it was not *O. lusitanicum*, but *O. vulgatum* var. *ambiguum*, hence my authority.—JAMES PERCIVAL.

BRUSSELS SPROUTS.

THE following mode of culture, which I have followed for several years, has always succeeded; I therefore offer it to the readers of the Journal. About the second week in March a piece of land is selected which has previously received a dressing of manure; this if light is trodden rather firm and then levelled with a rake, after which I take a piece of wood with a flat end (an old shovel handle sawn off level will do), and make holes not too deep at a yard apart all ways, then drop a few seeds in each hole and level with a rake as before. When the plants have made the third leaf, all are drawn from each clump except one. Last spring when drawing them two additional rows were made with the drawn plants; the result has been that the whole of the plants that were unmoved have supplied us with fine sprouts, and will continue to do so for some time to come, whilst of the two transplanted rows only three plants have survived the severe frosts which visited us during the winter. The variety is Carters' Perfection, and is all that can be desired.—W. W. B.

A DAY AMONGST HYACINTHS.

HYACINTHS vary with varying seasons. During some years they are uniformly fine, in others only of average merit. This year they are not in their best form, the spikes generally lacking that massive appearance that is coveted by cultivators. This is no fault of those who grow the plants nor of the vendors of the bulbs, but is the result of the weather during the preceding year not having been conducive to their free growth and perfect maturation. Nowhere can a better estimate of the general quality of the flowers be gained than an inspection of the collections of those who devote special attention to them, and where the best bulbs and cultural skill are employed in preparing the plants for exhibition—hence we will refer to a few collections.

MESSRS VEITCH & SONS, CHELSEA.

During late years Messrs. Veitch have admittedly been the premier exhibitors, although they have not competed for the prizes that have been offered. Their Hyacinths grown at Coombe Wood are now in their best condition, and, although not quite equal to those of former years, a hundred or more grand examples of culture can be staged out of the three hundred plants grown. It is only in this collection that any number of new varieties can be seen, and these are not numerous—about a dozen—and less than half of them will never become famous. A few, however, are really good.

First to be mentioned is *Electra*, a pale silvery blue flower with a dark stripe down each segment, and darker tips, somewhat of the colour of Princess Mary of Cambridge. It has a grand massive spike and large bold bells. A fine variety for exhibition. Queen of Yellows is unquestionably the best of its colour. The spike is broad and symmetrical, and the bells large, with broad segments. The colour is clear and untinted with green, which renders it distinct from other varieties of the type. Countess of Rosebery is a very promising red variety. The colour is very bright, with pale wire-like margined segments. In spike and bells it resembles *Vuurbaak*. *Cavaignac* has been seen before. The colour is greyish blue; the centre of the flower nearly white, with dark anthers and tips; exterior of the tube blue; bells broad and massive. A distinct and fine variety. Distinction, small spike, black stem, maroon crimson segments suffused with violet—a new and very rich colour. *Triomphe des Roses*, good spike; like *Grandeur à Merveille*, but the flesh colour more deeply tinged with pink—attractive. *Nonpareil* is of the same character, but not quite so good. *McMahon*, very dark blue, good symmetrical spike; like *Mimosa*, but a few white petals render it distinct. Captain Boyton, pale blue, extra large bells, resembling

Tricolor; plant of stately robust growth. Marchioness of Lorne, a singular colour—buff, with red stripe in the segments. Queen of Holland, blue tinged with violet, medium spike. Of the new varieties certificated last year Duke of Connaught, King of the Reds, and The Sultan prove worthy of the honours accorded them.

Of the varieties in general cultivation the following are the finest:—*Whites*: La Grandesse, the premier white Hyacinth; Snowball, L'Innocence, Queen of the Netherlands, Mont Blanc, Alba Maxima, and La Franchise are all very fine, as also is the old dwarf variety Madame Vander Hoop. *Reds*: Macaulay heads the list this year, every plant having superior spikes. Fine also and very rich are Vuurbaak and Garibaldi, while Lady Palmerston is clear and bright, and Koh-i-noor and Pellissier very good. Of the waxy flesh-coloured varieties Grandeur & Merveille, Gigantea, and Charles Dickens are all in excellent condition. *Dark Blue*: King of Blues maintains its pre-eminence, but Duke of Connaught, certificated last year, is very rich and fine; Sultan is also good, and Masterpiece, nearly black, is conspicuous by its close handsome spike. *Pale Blues*: Electra, above noticed, is the best of all, followed by Czar Peter, Blondin, Grand Monarch, Lothair, and Lord Derby. Of the mauve varieties De Candolle is by far the best. The best doubles are Van Speyk, blue, and Lord Wellington, very pale rosy pink; both of these are grand, the bells being quite 2 inches in diameter.

It is somewhat singular that the following varieties that are nearly always good have not "done well" this year, the spikes being small and unsatisfactory—Von Schiller, Princess Mary of Cambridge, Havelock, Grand Lilas, and Baron Van Tuyll.

MESSERS. OSBORN & SON, FULHAM.

The collection of Hyacinths in this nursery comprises over 170 varieties, all the best of the old and recent forms being represented. The plants in vigour of growth, brightness and purity of colours, were very good and somewhat better than they were last year, although the season has been such an unfavourable one. The single varieties were very numerous, and many of them were in excellent condition. The most noticeable were the following:—Vuurbaak, small bright crimson bells in large spikes; Pieneman, bells shaded with blue, very large in a loose spike; Prince Albert Victor, bells neat, rich crimson, spike very compact; Sultan's Favourite, bells creamy white faintly tinged with pink, close spike; King of the Yellows, pale straw-coloured bells, habit compact; Lady Palmerston, bells large and well formed, shaded with rosy pink; La Ornement, bells fine cream colour, spike close and dense; Charles Dickens, bells of good form, fine blue tint, spike massive and compact; Grande Vidette, bells large, pale blue, fine spike, an excellent old variety; Lothair, also a pale blue, but with smaller bells; La Grandesse, a superb white variety, with handsome bells and spike; Masterpiece, one of the darkest blue varieties, with good bells in a large compact spike; Blondin, a clear pale blue, bells and spikes excellent; Lord Macanlay, bells of medium size, bright rose pink colour; Czar Peter, colour of bells a delicate creamy white, good spike; Lady Derby, an excellent light blue with admirable bells and spike. Very few double varieties are grown, and indeed they are much inferior in symmetry and beauty to the single forms. The most remarkable for size of spike and flowers were the following:—Bloksberg, bells shaded with pale blue, very large and full; Lord Wellington, a well-known rosy pink variety; and La Grande Duchesse, a good creamy white, but rather loose and straggling. Many other single varieties are grown nearly equal in merit to those enumerated, but the names given include most of the best. A small collection of Tulips were contained in the same house, Vermillion Brilliant and Princess Helena being the predominating varieties; the latter is an exceptionally beautiful white, and the former is well known as one of the brightest coloured forms grown. Proserpine was also very good.

MESSERS. OUTBUSH & SON, HIGHGATE.

The display of Hyacinths at Highgate was past its best on the occasion of our visit, for a large number had been sent into the provinces for exhibition and sale. However, there were still enough left to indicate their general good quality. Most of the varieties already noticed were represented, and in addition were the following, all single varieties:—King of the Blues, an excellent dark blue; De Candolle, bells well formed, of a lavender puce tint; Miss Betsy, bells of neat form, purplish crimson colour; Von Schiller, colour of bells a fine pink; and

Marie, spike and bells large, colour very dark blue. There were also a few new unnamed varieties, two of which were very distinct and attractive. One had flowers of medium size but neatly formed, of a rich crimson tint, the spike being massive and compact. The other had large, pendulous, dark blue bells, and a long somewhat loose spike, but the intensely deep colour of the flowers more than compensated for this defect. The Tulips were in uncommonly good condition both as regards vigour and colour. The single varieties—Joost Van Vondel, white and scarlet Pottebakker, Keyzers Kroon, Proserpine, Cottage Maid, and Duc Van Thol were the best, and are too well known to need description.

CAPTAIN PATTON'S, NEW MALDEN.

Last April Capt. Patton exhibited a creditable collection of Hyacinths and other bulbs at South Kensington, and was awarded a bronze medal. Encouraged by the results of his first essay in exhibiting, and stimulated by the grand productions of Messrs. Veitch and other cultivators, he with a chivalrous spirit determined to do as well or better than those skilled cultivators. His attempt was a most spirited one, and has resulted in one of the most complete collections of Hyacinths that has ever been produced by an amateur in this country. The gallant Captain has now upwards of a thousand plants in bloom in more than 250 varieties, including the newest and most expensive that could be obtained. But the enthusiastic cultivator has found out that it is not bulbs costing 20s. and 30s. each that are the best for winning prizes and if he obtains the encouragement he deserves this year he will make a very different selection next and produce far better results. Yet notwithstanding the great number of varieties, many of which only produce small spikes, a number of really good plants can be selected worthy of being staged by the side of those of the best cultivators of the day. The experienced Captain Patton has gained will another year, if an equally determined effort is made, enable him to still further excel in bulb culture and command high honours. The Tulips in this collection are very good, the white Joost Van Vondel fine, and should be grown by all who desire white early single Tulips for exhibition or decorative purposes.

MISS CHRISTY'S, COOMBE BANK.

This is a very small collection, not numbering more than fifty Hyacinths, and about the same number of pots of Tulips; it is, therefore, the more creditable that the cultivator, Mr. Moorman, should have distinguished himself last year by obtaining the gold medal of the Royal Horticultural Society for these flowers. It was only by excellence of culture that he could have thus succeeded, and his plants are well grown this year, but not equal to last, extensive alterations in the grounds that have been in progress all winter having demanded primary attention. This small but well-grown collection is worthy of notice, as it suggests to others in charge of moderate-sized gardens that they may also win success if they seek it earnestly. The Gardens at Loxford Hall it may be remembered are only of moderate extent, yet Mr. Douglas has fairly won the honour of being as a gardener the premier cultivator of Hyacinths. Let others emulate these successful cultivators.

ASPHALT WALKS.

I SEND the following in reply to Mr. R. Inglis as to the best mode of making asphalt walks. Take one cartload of ashes and clinkers from the stokehole, and mix with coal tar in a boiling state until the whole mass shines like glass. Use the material the same week it is made. Do not sift it or separate the clinkers from the rest, but break them up to the size of hen's eggs. Three labourers should be employed in spreading it—one to fill the barrow, another to wheel, and the last to spread each barrowload as it is brought, raking the rough material into the middle of the walk, covering with the finer portion. Sifted gravel or any other substance available should be spread over the surface, and then roll with a light roller.—TAYLOR, Lechlade.

AUTUMN PEARS—DOYENNÉ DU COMICE.

If it were possible to have an election of Pears under conditions that perfect fruit of the different varieties could be submitted to a number of connoisseurs, it is probable that this variety would have a very high position on the poll; but an election conducted under existing circumstances would have a

different result, because a sufficient number of cultivators are not yet acquainted with the merits of this very fine and delicious Pear. Trees during the last few years have been freely planted in various gardens, but only a few compared with such Pears as Marie Louise, Louise Bonnes of Jersey, and others, have arrived at a free bearing state. Those who have not yet obtained this variety, and have room for a tree or trees on walls in the north, and as pyramids or espaliers in warmer localities, will not err by adding it to their collections. It is a grand Pear of high quality, and, so far as we have seen, the tree is a free and healthy grower and a very good bearer. Doyenné

du Comice is described in the "Fruit Manual" as follows :—Fruit large, 3 inches wide and $3\frac{1}{2}$ inches high; pyramidal or obovate, sometimes rather uneven in its outline. Skin lemon-yellow, with a greenish tinge, considerably covered with speckles and patches of pale brown russet, and particularly so round the eye and the stalk. Eye small and open, with short pointed segments, set in a considerable depression. Stalk half an inch to an inch long, fleshy at the base; sometimes curved, and inserted in a round narrow cavity; sometimes very short and stout, and obliquely inserted almost at right angles with the fruit. Flesh yellowish white, very tender,

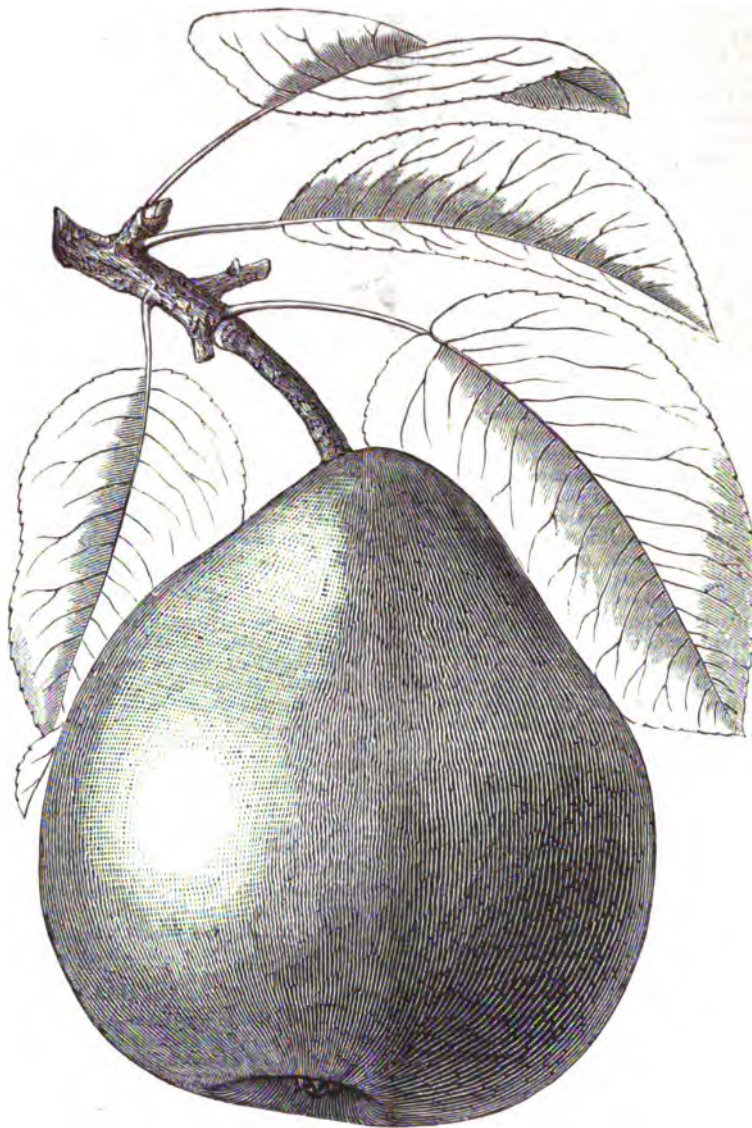


Fig. 33.—DOYENNÉ DU COMICE.

buttery, and melting, very juicy, rich, sweet, and delicately perfumed with a sort of cinnamon flavour. This valuable Pear was raised in the Garden of the Comice Horticole at Angers, and the original tree first fruited in 1849.

TETRATHECA HIRSUTA.

AMONG the numerous species of plants that have been introduced from New Holland there are many of great decorative value for the greenhouse and conservatory which, although generally admired, are not grown very extensively. As these

are included among the plants technically termed "hard wooded," supposed difficulty of culture is often the principal reason why they do not receive more attention. This is a great mistake; for though they need a little extra care in regard to the composition of the soil and in supplying water, yet anyone who has a light, cool, and dry house from which frost can be excluded may successfully grow a collection comprising all the most beautiful species.

The Tetrathecas are among the most popular of hard-wooded plants, for they grow very freely, possess an elegant habit, and produce their pretty and delicately tinted flowers

in abundance in spring and summer. Four or five species are grown in gardens, the one represented in the annexed engraving being by no means the least attractive. *T. hirsuta*, like all its congeners, is a native of New Holland, whence it was introduced to Messrs. Rolleson's nursery by Baron Hugel in 1848.

It succeeds well in a compost of equal parts loam, peat, and sand, a few finely broken potsherds being incorporated with the soil to keep it open. The drainage must be good, as one of the chief causes of non-success with *Tetrathecas*, as with many other plants, is stagnant moisture about the roots. During the



Fig. 34.—*TETRATHECA HIRSUTA*.

summer abundant supplies of water will be needed, which must be gradually decreased as the days become shorter and colder. Ventilation is of great importance at all times, and even in the winter advantage should be taken of every fine dry morning when the temperature is above the freezing point to admit air as freely as possible. At the dull season of the year the plants

succeed best on a shelf near the glass, as light is necessary to prevent the growth from becoming long and weak.

Tetratheca hirsuta is of sub-shubby habit, the leaves being narrow and bright green, and covered with short hairs. The flowers are borne on slender peduncles in the axils of the leaves, and are of a bright pink or purplish tinge, with a ring of

darker blotches near the centre. The flowers when first opening are slightly pendulous, but afterwards become more erect; they are produced very freely during the present month and April.—L. C.

NOTES ON HERB CULTURE.

A GOOD supply of herbs is of great importance, and in many gardens there is a demand for them daily, and in all some are wanted frequently. At the same time it may be pointed out that herbs very often do not receive that attention they deserve, although a great quantity can be obtained from a small piece of suitable ground. I devote one of our best borders, 50 yards long by 6 yards wide, to them, and the produce is always fine and abundant. At one time there were only a few old half-dead stumps of roots, all of which were thrown away. In the March following the border referred to was cleared of everything and received a good dressing of manure. This was deeply dug in, and about the beginning of April seeds of every herb required were sown on this ground. All the plants of tall habit were sown in rows 18 inches apart, and some of the very dwarf species were sown in beds 4 feet wide. In the autumn we had a good supply.

All herbs may be raised from seed, and with one or two exceptions this is the best way of obtaining a stock. Mint is perhaps about the only one that it is easier to raise by dividing the roots. The seed of some herbs is much smaller than others, but I make little or no difference in sowing, all the drills being drawn about $1\frac{1}{2}$ inch deep. Only a fine day, when the soil is dry and in good working order, should be chosen for sowing the seeds. The best way is to draw all the drills in the morning and not sow the seed until the afternoon. The seeds should not be sown thickly, and afterwards they should be covered with some finely-sifted rather rich soil, then rake the surface smooth. When the young plants appear the hoe may be run between them, and when the plants show any signs of being too much matted in the rows thin them out. Sage, Thyme, and indeed every kind of herb, bears transplanting very well from the seed row, and when enough seed has not been sown of any kind the plants may be thinned out and planted in fresh soil when a few inches high.

Herbs should always be kept quite free from weeds during the summer, and to do this easily there is no better way of growing them than in rows, as the hoe can be frequently employed between them. Mint is better in broad rows than in a bed, as the latter has always a great tendency to encourage weeds. When once a good stock of young plants has been raised from seed they will last for many years if grown in good soil. Mint is the only herb we ever cover in winter, and this is not really necessary, as it is not easily injured by cold. All herbs should be cut just before they bloom in sufficient quantity to last during the winter, or if they bloom too early the flowers should be cut, as August and September is early enough to cut for drying. In gardens the usual way is to cut the herbs and dry them in a shed before tying in bundles. If long in drying much of their green colour is lost, and some cooks prefer to have them from the garden just as they are cut, when they dry them rapidly on a hot plate and powder them before the colour has left them. When dried in the ordinary way they should never be tied up before they are quite dry, and then they should be hung up in a dry place, as they keep much longer than when exposed to any damp. I have Mint, Thyme, and Tarragon that was cut in 1878 much fresher now than some cut in 1879. When all has been obtained that is required for drying no more should be cut from the plants until spring. Thyme and Sage are sometimes killed by cutting them too closely during the autumn and winter. All superfluous growths and dead shoots should be left on the plants until they start into growth in the spring, when everything may be cut away but the new growths. When this is attended to in time it is long before the plants become scraggy, and when the soil begins to be exhausted a little decayed manure may either be spread on the surface or lightly forked in.

Cheerily may be sown at any time, as it quickly runs to seed. The best way to keep up a supply is to make one sowing about the beginning of April and another two months later. By that time the first sown will be flowering, after which the seed will fall and germinate. The other batch will be in when this is taking place, and by the time it is in seed the self-sown plants will be ready for use. Borage is treated in the same way. The most useful herbs are Mint, Sage, Thyme, winter and summer Savory for seasoning, Marjoram for soups and stuffing,

Dill for pickles, Fennel for fish, Hyssop and Basil. Sweet Basil is one of the most tender herbs, and seldom succeeds well out of doors unless in the hot part of the summer. A little seed may be sown in a pot and placed in a gentle heat any time in spring. When the plants are large enough prick them out into a box or empty cold frame, and grow them on in good soil with the glass over them. Before they bloom they may be cut and dried for use at any time. Those who prefer green Basil may have it all the year round by sowing a little seed in a pot every month, and growing the plants in a temperate place during the winter. Mint and Tarragon may be had green all the winter if a few roots are lifted after the growths have died down in autumn, placed in a box or pot and covered with light soil, and then kept in a pit or house where the temperature is about 60°.—A KITCHEN GARDENER.

IVY CULTURE.

I GROW nearly if not all the known varieties of this most useful and charming evergreen climbing plant, and would be glad to hear the views of some of your able contributors as to the best manner and means of cultivation. My practice is to plant in good loam, train perpendicularly, syringe in hot weather, and for the first few years remove the leaves in April.

Some authorities do not agree with this treatment, insisting that the foliage should not be removed, but only the breast growth, which is invariably cut away. The plan I have adopted has hitherto proved singularly successful, and although involving a little extra labour I am well rewarded, for the new foliage produced in the early summer is very beautiful. It is difficult to make selections amongst such an attractive family, but perhaps my chief favourites are *Hedera Cavendishii*, *Kenwoodiana* (sometimes called *Caenwoodiana*), *palmata*, *rhomboides*, *obovata*, *marginata*, *robusta*, and *maculata*.—G. DUFFIELD, *Winchmore Hill*.

THE FERTILISATION OF FERNS.

It appears from the manner in which Mr. Eadon has criticised my explanation of this subject, that although he headed his remarks in the form of a question, "Ferns and How are they Reproduced?" yet he was prepared to oppose anything that did not agree with the opinions he had already formed. I am led irresistibly to take this view from observing that he does not weigh the arguments or contrast the facts on both sides of the question, but endeavours to prove that all my statements are inaccurate. In this, however, he is unsuccessful, for not only are some of his observations extremely illogical and incorrect, but I fail to detect a single fact that he has advanced which can be considered as opposed to those that I detailed. My chief object was to furnish him with a complete reply to his apparent question; but as he seems more disposed to teach than to be taught, it now only remains for me to defend my statements.

That Ferns are really fertilised in the prothallia is now so well known that I should have felt quite prepared to accept the truth of others' observations, even though I had not confirmed them myself; but during experience in one of the largest collections of Ferns in Europe I enjoyed ample means of proving the truth of Suminski's discovery, having repeatedly seen under the microscope both the archegonia and antheridia, thus placing the subject quite beyond mere theory.

To avoid occupying the valuable space of the Journal unnecessarily I will vindicate my previous statements as briefly as possible. That Mr. Eadon has not succeeded in discovering these organs with a lens I do not doubt. It is only with the high powers of good microscopes that they can be detected, and then, as I have already said, perseverance and care as well as some experience in microscopical work are needed, in one of which points his friend must have been deficient. The engravings employed to illustrate the subject were the exact representations of drawings from the full-grown prothallium, which I have seen quite as often that size as larger. If your correspondent will again examine the figure of *Adiantum Capillus-Veneris* he will see that the young frond does proceed from near the indented portion of the prothallium, where, as I stated, the archegonia are formed.

With regard to the quotations from Mr. Moore's work, Mr. Eadon's perception must be extremely acute if he can discover how one "nullifies" the other. I am unable to do so. *Lastres remotas*, *Asplenium germanicum*, and *A. microdon* are reasonably regarded by Mr. Lowe and others as probable hybrids,

and the former writer observes as follows concerning their fertility:—"I have failed to raise spores from any of these, and am not aware of anyone else succeeding. . . . There are plenty of good-looking spores on *Lastrea remota*, yet they will not germinate. For the last ten years several pans of spores from this Fern have been sown yearly without a single plant having been raised." Perhaps because Mr. Eadon has found spores on the plants he at once considered them fertile. He further states, "There is proof positive that the abnormal forms of British Ferns are not the result of cross-fertilisation," an assertion which he does not and cannot substantiate. It is evident in the passages I cited from Mr. Lowe's lecture at Birmingham that he fully accepts the true facts of Fern fertilisation, and has founded his experiments upon a correct knowledge of them. Mr. J. Smith is indeed an eminent pteridologist, but having been blind for many years he has long been unable to pursue his investigations; nevertheless, he informs me that Mr. Eadon is quite wrong in implying that he entertains any doubt concerning the fact that fertilisation occurs in the prothallium. The quotation given from Mr. Smith's work has no bearing upon the real question.

If Mr. Eadon is desirous of investigating the subject further he may consult with advantage the works of Sir Joseph Hooker; Professors Bentley, Henfrey, Balfour, Asa Gray, Oliver, Dr. Masters, and the Rev. J. M. Berkeley, the introduction to cryptogamic botany by the latter author being one of the best in the language. All these writers, and many others both in England and on the continent, have fully explained and illustrated the matter, and until Mr. Eadon is prepared to assert that all their observations are incorrect he would be wise not to oppose what he is totally unable to disprove.

Mr. Smith of Kendal, while not fully accepting the explanation given, does not keep to the subject. The other modes by which Ferns are reproduced have no bearing on the matter. The white bodies he has observed in the spore cases are probably immature spores, they certainly have nothing whatever to do with the fertilisation.—L. CASTLE.

[It is not necessary to insert more on this subject.—EDS.]

REVIEWS OF BOOKS.

Botany for Children. By the REV. GEORGE HENSLAW, M.A.
London: Edward Stanford.

THIS little work is one of the already numerous books devoted to elementary botany, with the majority of which it can be most favourably compared, as the author has generally treated the subject in a clear, simple, and yet exhaustive manner—points of great importance in works of this character. It is explained in the preface that for very young children the book is only intended to be studied with the aid of a teacher; but above the age of ten an intelligent child may, by his own efforts, considerably extend the knowledge he has gained. Even then, however, much greater progress would be made under a teacher's care than otherwise. Referring to the benefit derived from a study of our native plants, as inducing habits of careful and accurate observation, the author justly remarks that much might be done by country clergymen to extend such knowledge with pleasure to themselves and advantage to others. He gives as an example of what may be done in this way the success that the Rev. Professor Henslow's efforts to introduce botany into the village school of Hitcham, Suffolk, who, by adopting a floral schedule, "rendered the science capable of being taught to children not only with great simplicity but also on a thoroughly scientific basis."

Thirty of the most common British plants are described and illustrated, those selected being types of the principal natural orders represented in Great Britain. It is rather strange, however, that the Umbelliferae should have been omitted, for many other orders of considerably less importance are represented which could have been much better excluded if the want of space, as stated in the preface, was the only plea. In describing the forms of the various organs of plants their functions are briefly explained, many of the most remarkable phenomena of plant life being incidentally referred to, and the chief economic uses of plants are mentioned.

A Year's Work in Garden and Greenhouse. By GEORGE GLENNY. London: Chatto & Windus, Piccadilly.

THE greater portion of this book is in the form of a calendar, and the hints and recommendations may possibly prove serviceable to some readers; but the volume has this drawback—that

those who are acquainted with the practice of gardening do not need the reminders given, while those who are not will, we think, fail to find what they require, for they are told frequently enough what to do but not by any means fully and clearly how to do it. Still, through the pages useful hints are scattered. The "Select Lists of a Few Choice Flowers, Plants, Fruits, and Seeds" are very faulty. Not only are named varieties of *Cinerarias* and show *Calceolarias* included, plants of which cannot be had, but the varieties of such useful plants as *Begonias* are not well selected, and the most useful *Chrysanthemum* in cultivation—Mrs. G. Rundle, is omitted; but the names of "*Geraniums*" (*Pelargoniums*) are in a state of confusion. Silver Tricolors are named that are not Tricolors, Variegated Ivy-leaved varieties that are not variegated, and double-flowered Zonals that are not double; indeed, all the varieties named as double are single, while there is no list of single Zonals at all! These lists appear to be a compilation from catalogues, and betray either a want of care or lack of knowledge on the part of the compiler, for besides the incongruities referred to the names of many varieties are incorrectly spelt.

VIOLETS.

MR. LUCKHURST is usually so advanced in his views that I was surprised to read his remarks respecting Violets. Unfortunately the varieties were not happily selected for comparison. Czar, though a larger flower, is quite as pointed in its petals as the Russian (*Viola suavis*), and as Mr. Luckhurst observes is not so free-flowering as the latter. Russian not only has small flowers but short footstalks, which are only available for making up into knots, but the improved varieties may be made into bouquets 6 or more inches in diameter. Czar and Giant are superseded by *Victoria Regina*, with larger flowers and rounder petals; it commences to flower in September, and continues to furnish blooms through the winter under favourable conditions. Of the older forms *Devoniensis* is a fine variety, blooming from September to April, and is very fragrant. *V. odoratissima* has fine blooms freely produced and very sweet, and greatly surpasses Russian, Czar, Giant, Single White, and Single Red. The improved varieties have more than double the size of flower, of better form, freely produced over half the year, with as much perfume, more robust constitution, and from the longer footstalks of the flowers are very much more useful. Violet *argenteaeflora* promises to be a great acquisition. The flowers are very pretty, not so large as *Victoria Regina*, shining blush, some flowers nearly white with purple spurs. In bunches they are effective and contrast well with the purple forms. The leaves are small—about the size of the common hedge Violet, and not the least of its merits are its long footstalks and delicious fragrance. Of the doubles *Marie Louise* is a fine variety, lavender with white centre, flowering freely in autumn, and continuing through the winter under favourable conditions. *De Parme* is very valuable, which I originally obtained from Florence some eight or nine years ago, and have distributed many thousand plants since, it being very freely increased by suckers. In growth it is very compact, being more disposed to produce suckers than runners, having small leaves, and commences flowering in September, and blooms continuously up to May. The flowers are large, very double, slate or lavender purple, produced in great abundance; indeed, it is with me the best of all the Neapolitan forms of Violet for continuity and abundance of bloom and fragrance. This handsome variety produces its flowers very freely in pots, and does not take up much room. In a light position in a greenhouse it affords a succession of flowers through the winter.

I grow all my Violets principally in frames during the winter, planting out rooted suckers in April or early May. Nine inches apart every way is sufficient space for all the double forms, the single varieties are allowed a foot, planting firmly, and watering until established. All runners are removed as they appear and weeds destroyed. Nothing more is required (the ground being well dug and enriched prior to planting) to secure well-developed crowns, without which it is hopeless to expect Violets in quantity and quality. Lifted with balls in September they are planted in the frames or pits 9 to 12 inches from the glass, such varieties as *Victoria Regina* being planted 9 inches apart, and *De Parme* 6 inches. A good watering is given, the lights remaining off until frost, and after being put on air is admitted freely whenever the temperature outside is above 35°.

Venice is a beautiful variety not a great way from *De Parme*. Blandiana is also a very fine Violet. King of Violets, Double Russian, Double Red, and Neapolitan, with Arborea or Tree

may be dismissed with the observation that they are all pretty, but not comparable to Marie Louise and De Parme for quality and quantity of bloom over a lengthened period; those with Victoria Regina and Elegantissima being the best Violets for general purposes. Of the double whites Belle de Chatenay is very good but not at all free, and Queen of Violets is so prone to go blind as to give very few perfect blooms.—G. ABBEY.

WINTER-FLOWERING SALVIAS.

Few plants are more useful than the Salvias, and few are more charming during the winter months, the various colours of their flowers rendering them highly attractive, and the plants being very free-flowering are indispensable where there is a great demand for cut flowers. By growing a collection of five or six species a supply of flowers from October until April can be obtained, and with good treatment I find them of great value during the winter, especially *S. Grahami*, *S. splendens*, and *S. Heeri*. To obtain strong flowering plants for next winter, cuttings should be taken at once and inserted in sandy soil, five or six in a 60-sized pot. The pots should be placed in the propagating pit, where the cuttings will soon strike, when they may be potted singly in a rich soil. They should be placed near the glass in an intermediate house, and as growth advances the points of the shoots should be pinched out to render the plants bushy. They should remain in the intermediate house until the end of April, when they should be removed to a cold frame and kept close for a few days, then gradually give air until they are quite hardened. By the first week in June they should be planted out in a rich border fully exposed to the sun, and if the summer prove very dry liberal supplies of water will be necessary. The plants can remain in the border until the first week of September, when they must be taken up carefully with a good ball of roots, and placed in as small pots as will hold them, filling up with old manure. They should then be placed in a frame for a month, removing them to the greenhouse when the flowers appear. I have a grand display of flower now on plants grown as above described. Old plants should be cut back after flowering, and planted out and treated similarly to those grown from cuttings.

I find the undermentioned very useful and of excellent quality:—*Salvia Grahami*; *S. Heeri*, a profusely flowering species, dazzling scarlet; *S. gesneriflora*, with large and bright scarlet flowers; *S. splendens*, a very free bloomer, and most useful for winter; and *S. nigrescens*, a very beautiful species with long flower spikes, gracefully drooping, of a blackish-violet colour.—B. T. JAMES.

NOTES ON VILLA AND SUBURBAN GARDENING.

KITCHEN GARDEN.

Potatoes.—The weather has been very favourable for forwarding the work in the kitchen garden generally. Potatoes in particular having been planted in large numbers. A few remarks only on the subject are necessary, it having been fully treated by writers in recent issues of the Journal. In small gardens the early varieties only should be grown, as they bear heavy crops, mature early, which favours double cropping, and the rows can be placed much closer together than is the case with the more vigorous late varieties. A light soil being warmest is most favourable for the growth of early varieties, and the quality of the produce too is very superior. Those recommended for frames are equally well adapted for a south border or other warm positions, but the haulm must be kept covered with soil as long as possible to protect from frosts, and when too high for this it is advisable to protect with branches of evergreens, fern, or litter.

Carrots and Radishes.—A sowing of these may be made in a warm light soil. The varieties recommended for frames are suitable for this sowing, the same distances being allowed, the Radishes to be sown between the Carrots.

Lettuce.—Plants wintered in the seed bed or under cover should be planted out without delay, and others that may have been sown under glass may be pricked off in either boxes, handlights, cold frames, or a warm sheltered position. To follow these a sowing may be made on a south border. Most amateurs appreciate Lettuce, but few grow them well. A good open position and well-manured soil are the most suitable. On good soil from 10 to 12 inches apart each way is not too much for the Cos varieties. Paris White Cos is one of the best.

Cauliflowers.—Those wintered under glass may now be planted firmly with the trowel in well and freshly manured soil, allowing a distance of about 18 inches each way, but if large heads are required 2 feet between the lines is not too much. Place a few under the shelter of either a south or east wall, others on a south

border, and the remainder in a cooler position, in order to prolong the duration of the crop.

Brussels Sprouts.—If seed has not been sown on hotbeds or under glass, a little should at once be sown in a warm place. To have them in perfection a long period of growth is requisite; the aim therefore should be to have a breadth established as early as possible.

HOTBEDS.

Cucumbers.—Those sown thinly in large pots or pans should, when the second or third leaf is developed, be potted off singly into either large 60's or 48's, employing soil, previously warmed, consisting of turfy loam and a good addition of manure. It is the best plan, however, to sow seeds singly in the former size, and to shift the plants into 82-size pots should they be likely to become root-bound before a bed is ready for their reception. When the plants are growing freely pinch out their points, which will induce the production of side shoots, at which time they should be planted if strong, but if at all weak it is better to delay the operation for a few days. The heating materials, if well prepared by frequent turnings, should be made into a bed, which may be from 8 to 4 feet high at the back with a fall of 1 foot to the front. The bed to be made firm with a fork but not trodden, and the material should be well shaken out as the process goes on. The frame must be placed on the bed at once, and the lights kept close till the heat rises, after which the steam should be allowed to escape. When the trial stick plunged in the bed denotes a decline in the heat a few pieces of turf should be laid the grass side downwards in the centre of each light, to moderate the rather strong heat which sometimes proves too much for the plants. A mound of earth (about a bushel) should then be placed on the turf, the rougher it is the better; but those who cannot obtain turfy loam may substitute good garden soil three parts, and one part manure. When this is thoroughly warmed, the plants may be turned out, placing one, or at the most two, in each light. If planted uprightly the young shoots will snap when being trained; to avoid this, make a slanting hole, almost laying the plants down, and cover up or bury the stem to near the seed leaves, which will cause the stem to freely emit roots. Mounds only are made in the first instance to avoid the danger of confining the heat. Supply with warm water, and syringe when closing on fine days. Leave the lights slightly open at nights if steam be abundant, and ventilate during the warmest part of each day, more or less according to the external temperature, but beware of admitting cold winds. Shade with a light material during bright sunshine, and close at about 8 P.M., slightly damping the sides of the frame and the surface of the bed at the same time.

Choice Flower Seeds.—The temperature of a Cucumber frame is very suitable for the seeds of *Gloxinias*, *Begonias*, *Torenia Fournieri*, *Primula sinensis*, *Cyclamen*, *Solanums* for the subtropical garden, *Acacia lophantha*, and many others. The seed of the three former are very minute and must not be buried. Use finely sifted peaty soil, and over this a layer of silver sand, making the whole firm and level, and damping it with a fine rose some hours previously to sowing. Press the seeds in with the bottom of a flower pot, sprinkle a very little fine sand over the seed, plunge the pots in the bed, and cover with glass. If it be found necessary to sprinkle later on do it lightly, and use a pot with a very fine rose. None of the seeds should be covered at all heavily, and all germinate the more readily if covered with glass, and this again with either moss or short litter. The seeds of the *Acacia* should be soaked in water kept to a high temperature till they are swollen considerably. Many very pretty varieties of *Coleus* may be obtained from a packet of seeds.

WORK FOR THE WEEK.

FRUIT HOUSES.

Orchard House.—Apricots now in full bloom require free ventilation whenever the weather permits. In dull damp weather the ventilators should be opened slightly to promote a circulation of air. In mild weather the ventilators should be fully open by day and a little at night. In bright weather when the nights are cold air should be admitted early in the day, ventilating freely above a temperature of 50°, closing the house at 65°, so as to prevent too great a depression of temperature during the night. It is always advisable to facilitate the setting of the fruit by applying the pollen to the stigmas with a camel's-hair brush, which is preferably performed in the early part of fine days. Syringing must not be practised whilst the trees are in blossom. The trees, whether in pots or planted out, must be well supplied with water at the roots, for to allow the soil to become too dry is very injurious at any time during growth or while flowering. Strawberries will require sufficient water to keep the soil moist.

Vines.—The latest Vines will now be moving, and should be syringed several times a day, endeavouring to secure an even break by closing with a moist atmosphere at 75°, employing fire heat as may be necessary to secure a minimum of 55°. Vigorous young canes do not break evenly, and to prevent a rush of sap to the upper part they should be brought into a horizontal position until all the eyes have started, when the canes may be

tied up to the wires. Keep up a steady circulation of warm rather dry air where Vines are in bloom, maintaining a temperature of 70° to 75° by artificial means for Muscats and 5° less for Hamburgs, allowing an advance of 10° to 15° from sun heat. Attend to disbudding, tying out, and stopping in succession houses, not allowing the thinning of the bunches and berries to fall into arrear. Free-setting varieties may be thinned as soon as they are fairly out of flower, but Muscats and other shy setters should not be thinned until it is seen which berries have been properly fertilised. It is difficult to give any precise instructions for thinning, as the berries vary considerably in size in different varieties and even different individuals of the same variety. Every berry should have room to swell without becoming wedged, and yet sufficient berries must be retained so that the bunch will retain its form when cut. The fermenting material will ere this have been removed from the interior of the earliest house, as it should before the berries begin to colour, retaining, however, about a couple of inches thickness as a mulch, and giving the inside borders a thorough soaking with tepid liquid manure. After the Grapes commence colouring ventilate as freely as possible, and gradually reduce the atmospheric moisture. Young Vines planted last season and cut back to the bottom of the rafter or trellis in winter should be encouraged by gentle fire heat, so as to allow time for their making a good growth. The laterals should have their points pinched out at the first leaf to a length of 6 feet up the rods, which will cause the fruit buds to become plump for next season, but all above that height should be allowed to grow. Planting young Vines will require to be done early in next month, and where provision has been made for inside and outside borders the Vines should be planted in the former, which will be sufficient for the first year. The Vines, if cut-backs of last year, may be shaken out and placed in position either before or after they have made a couple of inches of growth, the roots being disentangled and spread out evenly in the border, covering them about 8 inches deep, and watering moderately to settle the soil about them. Vines of the present year's raising will not need to be planted out for some time yet. They are preferably raised in squares of turf, and may be planted when the roots are protruding through the sides; or if in pots they should be turned out before they become root-bound. They will require to have a temperature at planting-out suitable to Vines in growth—viz., 65° at night and 70° to 75° by day, with an advance of 10° to 15° with sun; but Vines of last year should be allowed to start unaided, syringing them two or three times a day according to the weather. Vines intended for early fruiting in pots next season, being cut-backs of last year's raising, should receive their final shift. The pots (12 inches in diameter) should be clean and efficiently drained, potting firmly in turfy loam, with about a tenth of old mortar rubbish and a sprinkling of crushed bones. The pots may be partially plunged in a bottom heat of 80° to 85°, but they must not remain in this so long that the roots enter the plunging material. Keep the house rather close, and if the weather be bright shade for a few days. It is essential that the canes be trained near the glass to insure the maturation of the growth.

Cucumbers.—Dull cold weather with easterly winds are very trying to the growth, and after such weather the foliage will flag severely under powerful sun. Upon a return to bright weather a light shading material should be employed for an hour or two at mid-day. The floors should be damped in the morning, and the foliage lightly syringed on warm sunny days at about 8 P.M., closing the house at the same time. Plants in full bearing require copious supplies of weak liquid manure in a tepid state. The old side shoots and foliage of established plants should be removed by degrees to make room for fruitful or young growths, the object being to keep up a succession of fruit. Avoid overcrowding, and do not tie in the shoots too tightly. The night temperature should be kept at 65° to 70°, the latter in mild weather, and 75° by day up to 85° with sun, allowing an advance to 90° after closing. Young plants having been stopped will require to have the lateral growths trained in, and so that each may be exposed to light and air to secure firm growth. Add a little soil to the sides of the hillocks as the roots push through. Plants in frames should be stopped when they have grown about two thirds the allotted space, and the laterals should be thinned if likely to be too crowded. Dung beds will require due attention in lining, keeping fermenting material in readiness for this and future beds as may be necessary. A double thickness of mats will be needed over the lights at night to prevent the temperature from falling too low.

Melons.—When the fruit is the size of walnuts give a thorough supply of water, and in a day or two cover the roots with good loam rammed well down. The fruits should be thinned to about four on a plant, retaining the best, and as evenly disposed over each plant as possible. Stop all growths to one joint, and remove any that are superfluous. Maintain the bottom heat at 80° to 85°, and the night temperature at 70°. Regularly train the growth of later plants, removing every alternate lateral. As the plants advance towards fruiting the same conditions as advised in the last calendar as regards watering should be adhered to. In pits and frames a bottom heat of 80° should be secured to plants beginning to run. The shoots will require arrangement, selecting

four of the most promising on each plant, training them over the surface—two to the front, the other to the back. Stop the leading shoots about a foot from the sides of the frame or pit, which will cause laterals to be produced, showing fruit at the second or third joint. When in flower maintain a rather dry atmosphere, impregnating the flowers as they become fully expanded, choosing a fine day, and stop the shoot one joint beyond the fruit. When set and swelling thin the fruit to four on each plant, or if extra sized fine fruit are desired a less number may be taken, with a certainty of their attaining to a size and perfection considerably higher than with double the number. Add some soil to the hillocks as the roots protrude through the sides. Successional plantings and sowings should be made according to the means and requirements.

FLOWER GARDEN.

Choice evergreens, especially Conifers, may be moved with perfect safety during mild moist weather in April, care being taken to lift with as good roots and as much soil as possible, giving a good watering to settle the soil about the roots; and if a mulching of partially decayed leaves be given the shrubs will not, unless the weather prove unusually dry, require further attention, but with genial showers they will become speedily established. Conifers and other ornamental trees should be examined about this time annually for rival leaders, in which case the strongest and best should be selected, and the others cut out or shortened so as to maintain the symmetry of the specimen. The side branches also must be attended to, and any that are disproportionate in growth should be shortened. The natural forms of the trees should be aimed at, avoiding severe pruning, which is certain to result in undue formality. The protection afforded Tea Roses should be gradually withdrawn; remove all weak or exhausted wood, leaving only the strongest and best situated, cutting away the unripe points. Tea Roses are not satisfactory when so closely pruned as Hybrid Perpetuals, and the latter are often pruned too severely; as by cutting out the weak wood and shortening back the strong wood, more or less according to the strength or variety of the plant, finer and more blooms will result than by cutting hard back to a couple of buds. The pruning of Hybrid Perpetuals should be brought to a close, except in cold localities, when it may be deferred another fortnight or three weeks. Beds that have been mulched with litter should have the latter removed, but the smaller portions may remain and be pointed in. In light soils a mulching of cow dung will be advisable. Many Roses thrive well on their own roots, especially in light soils. Continue to plant Gladioli at intervals to afford a succession of bloom. Corms of the ramosus and gandavensis sections which have been left undisturbed for several years are throwing up strongly, especially the former. Sow Sweet Peas, Mignonette, Sweet Sultan, Chrysanthemum Dunnetti and the double golden variety where the plants are desired to bloom. The two former should be grown in quantity, as they are valuable for yielding a supply of flowers. Seeds of hardy annuals should now be sown. It is a good plan to make the surface fine with the rake, scattering a little vegetable soil to sow on, and then covering the seeds with fine soil. Seeds of perennials may also be sown, the hardier kinds in the open; but most will be found to germinate better if sown in a sheltered situation in rich soil under handlights or frames. From the frame the young plants may be transferred to the open ground with safety. A frame should be prepared for Stocks, Asters, Zinnias, Marigolds, and Helichrysums, putting in 6 inches depth of soil, and sowing the seeds in rows about 3 inches apart. Bottom heat is not necessary, though a more speedy germination will be ensured by making up a bed of fermenting materials covered with light rich soil. Tagetes, Lobelia, and Pyrethrum for bedding purposes may be treated similarly, but in warm localities the latter may be sown on a south border. Calceolarias, Verbenas, and Gazanias wintered in cool quarters may be planted out in turf pits or prepared Celery trenches and covering with mats at night, or they may be planted at the base of south walls where protection is afforded. Plant out Hollyhocks, the ground being well enriched previously. Herbaceous plants are starting, and any that it may be necessary to divide and re-arrange should be attended to without delay. Well dig or trench the ground, adding some fresh soil or well-decayed manure. These plants are the first to cheer us with their flowers, and are always interesting. Snowdrops, Squills, Crocuses, Daffodils, Primroses, Polyanthus, Auriculas, Myosotises, and Wallflowers make an early display. Pyrethrums come in when showy flowers are scarce; and Peristemonas, though not quite hardy, make a grand display, and are valuable as cut flowers. Alströmérias are showy and lasting; Delphiniums also are fine for cutting—indeed, with a good border of herbaceous plants there is no occasion for empty flower vases.

PLANT HOUSES.

Greenhouse.—The early sown Primulas should, when they are large enough, be pricked off singly in small pots, employing turfy loam with a fourth of thoroughly decayed leaf soil or manure, and a sixth of sand. Calceolarias should be encouraged with liquid manure, and they may be shifted as they fill the pots with roots, especially those which are vigorous and not producing flowers. Fumigate freely and moderately. Chrysanthemum cut-

tings inserted at the commencement of the year may be shifted into larger pots, employing turfy loam with about a fourth of well decayed manure. If for affording specimen blooms, do not stop the growth; otherwise, pinch out the point. Repot *Fuchsias*, stopping the shoots until the plants are well furnished; employ the syringe freely on fine afternoon to prevent the increase of aphides and red spider. *Pelargoniums* producing the trusses will be benefited by supplies of liquid manure at alternate waterings. The plants must not be kept so dry as is desirable early in the season, or the foliage will suffer. *Vallotas* should have a light situation, and as they are growing freely water liberally and occasionally with liquid manure. *Epacris* that have flowered should be cut back, and if as large as required they may be cut to within a few inches of the preceding year's growth. Encourage growth by syringing overhead, and if a little extra heat be afforded they will break more freely. *Camellias* that bloomed early will be growing, and should be assisted with a temperature of 55° at night, and 10° to 15° more by day, shading from bright sun. Plants that bloomed at midseason will also be growing, and must be kept moist overhead and at the roots, affording shade and a little extra heat. *Azaleas* will be advancing, and when in flower must be shaded. Plants required for late flowering must be removed to a north house or other cool quarter, where they will come on more slowly. Heaths should have the flowering shoots secured in position, employing as few sticks as possible. *Dentzias* after flowering should be well cut back, which will result in stronger growth.

TRADE CATALOGUE RECEIVED.

Thomas S. Ware, Hale Farm, Tottenham.—*Catalogue of Choice Hardy Perennials.*

TO CORRESPONDENTS.

ADDRESS (*Anerley*).—Write to Mr. Matthews, the Royal Pottery, Weston-super-Mare.

MARSHAL NIEL ROSES (*G. L.*).—Apply to some of the retail florists in Covent Garden Market.

NARCISUS (*W. R.*).—No one could identify the flower; there are so many varieties nearly alike, and your specimen was very much injured.

GARDEN STRUCTURES (*Kille*).—The plan you have submitted shall have our attention. Questions arriving on Wednesday morning can seldom be answered until the following week.

SHAMROCK (*W. B.*).—The specimen sent was withered, but it is not the true Shamrock, if the true be *Oxalis acetosella*. We have had many three-lobed plants sent to us from Ireland, all said to be the Shamrock, yet all of differing species.

MURSEYMAN'S NEGLECT (*Mrs. S.*).—We have reason to suppose that the nurseryman you name is a "trustworthy tradesman." He has the reputation of being a respectable man, and we cannot account for the circumstance to which you direct our attention. We think you will hear from him in the course of a few days.

MELON CULTURE (*W. B. H.*).—You cannot have better instruction than that given from time to time in our "Work for the Week" column. There is no special work on the subject, but our "Garden Manual" contains concise instructions on the cultivation of this and all other house, frame, and garden crops. It can be had post free from this office for 1s. 6d.

EPHONIA JASMINOIDES (*A. J. W.*).—Although this plant will when established flower freely in a greenhouse, it makes much more rapid growth in a stove, and you will find it advantageous to grow on the plant in a heated structure until it has attained a good size; it will then succeed in a warm greenhouse. The Orchid flower that was much crushed resembles *Phaius grandifolius*.

APRICOTS NOT FRUITING (*A Constant Reader*).—We have referred to your former letter and find that we did not mistake your question, but you misstated your case. The remarks we published respecting Peaches apply with still greater force to Apricots. The trees have made too much wood that has not been sufficiently matured, or blossom buds would have formed. Apricots, however, are not well adapted for this mode of culture, and you can occupy their space more profitably with Peaches, Nectarines, or Plums.

BOILERS (*Yorkshire*).—We cannot undertake to decide on the merits of rival boilers. They all do the work they profess to do, and all should be excluded as much as possible from exposure to the air. The greater the surface of the boiler exposed to the direct action of the fire the greater is the heat communicated to the water. Where the heating is not satisfactory it is more often the consequence of faulty arrangement of the pipes than of the construction of the boiler.

IVY AND CLEMATISSES (*Putey*).—If the Ivy is cut occasionally, removing loose growths and much of the foliage in spring, and the Clematises are planted in good soil and supported by applications of liquid manure to maintain vigorous growth, the two plants will grow fairly well together; but you can scarcely expect to have the Clematises so fine as they would be if not associated with the Ivy. We do not, however, dissuade you from carrying out your object, for with due care and good attention to the plants you may succeed in forming attractive plants.

CULTURE OF CLIMBING PLANTS (*A. R.*).—All the plants you mention may be raised from seeds in heat, but none of them will succeed under the shade of Vines. *Canary Creeper* is a half-hardy annual, *Thunbergia alata* a greenhouse annual, and *Viscaria* a hardy annual the seeds of which may be sown outside. All the others are greenhouse perennials, requiring light rich soil and abundant supplies of water in hot weather. These may be increased either by seeds or cuttings, the latter being inserted in sandy soil in a warm frame, where they strike readily.

APHIS WASH (*K. A. T.*).—We have not tried the insecticide you mention, but do not think that a moderate portion of it draining into the borders, after syringing Peach trees and Roses would do any injury, but it is unsafe

to allow any insecticide to saturate the soil of plants in pots. If the trees are syringed, as they should be immediately the first insect is seen, only a small quantity of the solution will be needed, and there will be little to drain away; but if insects are allowed to increase in great numbers the trees then require drenching, and an undue quantity of the "wash" then drains into the soil, and may have a pernicious effect.

SHADING GREENHOUSE (*Yorkshire*).—A thin canvas blind worked on a roller, and let down and drawn up as required, is not expensive, and will answer your purpose. Where a light yet permanent shade is required a mixture of whitening and skim milk thinly applied to the glass with a brush is effectual, or the preparation known as summer cloud may be used. It has a neat agreeable appearance, and has given satisfaction to many cultivators who have adopted it. For a house, however, containing a mixed collection of plants we prefer a moveable blind. An intelligent joiner will advise you on the best mode of fixing the blind.

BOUGAINVILLEA GLABRA (*Idem*).—The plant will thrive equally well whether trained to a pillar or a wall, provided it has a light position. It will grow more freely planted out than grown in a pot, but will not flower so soon as if the roots were confined. It would be well to grow it in a pot for the first year or more, and then if it does not cover the space intended, or grow so rapidly as required, plant it out.

DISBUDDING VINES (*Subscriber*).—The reason that we do not advise that young canes be denuded of the buds from the ground to the base of the rafter is, that a little foliage retained there materially assists the swelling of the Vine at the base, which is very desirable. When all the buds are removed that portion of the Vine becomes thinner than the rod above, and the sap vessels are contracted; hence, instead of rubbing off the buds in question we advise you to let them make some growth, stopping each shoot at three or four leaves from the stem and subsequent growths at the first leaf. If the growths are allowed to extend considerably more than we have advised the Vines will be benefited rather than injured, but it is sometimes inconvenient to let such growth occupy much space at the front of a house.

CAMELLIAS AND AZALEAS AFTER FLOWERING (*Puddle*).—You have done right by placing the plants in heat, but as they have made growth freely it would be well to remove them to a cooler, but not to a cold house. A vinery at work with a night temperature of 55° to 60° would be until they are ready to flower, by which time the temperature of the greenhouse should be suitable. *Azaleas* after flowering should be placed in moderate heat, and be syringed freely to assist them in making their growth. A temperature of 55° to 60° will be suitable. You may place the *Hoya* in the Cucumber house if you desire it to make rapid growth. All the numbers you quote, also the indexes, can be had from this office in return for thirty-three pence postage stamps.

GRAFTING DAPHNE INDIKA (*Idem*).—The stocks employed are *Daphne Laureola* (the Spurge Laurel) and *D. pontica*. They should be established in pots, and placed in heat in the spring for a week or two before the scions are attached, which also must be in a healthy state and commencing growth. The side grafting is usually adopted. Remove a portion of the bark from the stock and a corresponding portion from the scion, so as to make a perfect fit of the two, the operation being done quickly yet carefully. Secure the stock with a soft strand of matting, not, however, wrapping it tightly or tightly round the plants, which should be placed in a close case, and if plunged in gentle bottom heat the union will be more quickly effected. The stocks may then be partially cut down, and shortly afterwards the remaining portion should be severed close to the scion.

TEA ROSES IN POTS (*Novice*).—Your proposed mode of culture is correct. As the plants become well rooted transfer them to larger pots, employing a compost of three parts of turfy loam, and one part of decayed manure, with a 7-inch potful of bone dust and the same of soot to each bushel of soil. Let the pots be clean and well drained, and pot rather firmly. A little artificial heat will be beneficial at this season of the year, provided—and this is important—that the plants have a very light position with plenty of air, but not exposed to sharp currents. Your object must be to produce short-jointed wood. The growth must be trained to stakes, and will mature as well or better in a very light well-ventilated house as out of doors. The plants must be kept scrupulously free from insects and mildew. You will find practical notes on the culture of Roses for winter flowering by Mr. Barclay in No. 978 of the Journal. If you do not possess this number it can be had from this office in return for 3d. in postage stamps.

PLANTING VINES (*Old Subscriber*).—Your house will not accommodate more than six Vines, two being trained 18 inches from the ends of the house and the others at equal distances between them, the rods will then be about 3 feet 5 inches apart. This is quite close enough for ensuring good Grapes; but if you prefer variety rather than fine produce you may plant seven Vines, and by disbudding and leaving the laterals about 2 feet apart you may, with good culture, obtain very good bunches. To the three varieties you mention you may add Black Hamburgh, Muscat of Alexandria, and Foster's Seedling. With a sufficiency of heat all these varieties will succeed fairly well in the same house. Where Gros Colman can be produced in good condition there Muscates will succeed. Unless you can command a temperature of 60° to 65° at night when the Vines are flowering we do not advise you to plant either Gros Colman, Barbarossa (Gros Guillaume), or Muscat of Alexandria. For general usefulness no variety equals the Black Hamburgh for cool vinery treatment, and it succeeds well in a house with a night temperature of 55° to 60° during the flowering period, as also do Foster's Seedling and Madresfield Court. During the first two or three years you may grow good crops of Tomatoes in the house, some planted in the border and trained to stakes, the roots of the Vines being outside, and others trained to the back wall.

RAISING CELERY PLANTS (*A Lady*).—Many Celery plants are spoiled by the seed being sown in heat too early and thickly when conveniences are not provided for growing them on without check. Plants that are permitted to be crowded as thick as Mustard and Cress in seed pans and cannot stand upright when transplanted, cannot be expected to produce satisfactory results. Celery plants should never be checked in growth, and the fewer times they are transplanted the better. There is no better plan of raising plants for the main crop than making up a bed of leaves of rich light soil, so as to generate a little heat, and covering it with 6 inches of rich light soil, the seed being sown very thinly and covered lightly. The soil should be surrounded with boards on edge, and kept in position with stakes, frame lights or old sashes being placed across the bed. The soil must be kept constantly moist, and for the first ten days the glass may be covered with

mats to prevent evaporation from the surface of the bed, but the moment the young plants appear they must have all the light possible. The bed should be large enough to enable sufficient plants being raised without crowding; if they are half an inch apart when they appear above soil they will be better than if closer; and as they grow half of these may be taken out and replanted if necessary, the others being left to grow until they can be planted in the trenches without any preparatory pricking-out. If no glass is at disposal the bed and plants may be protected with mats. The present time is suitable for making the bed and sowing the seed. Plants so raised and kept steadily growing seldom "bolt," and they are far superior to those raised in pots and subjected to excessive crowding. If you sow *Endive* very thickly in rich soil at the beginning, middle, and end of July you will have a succession of plants for blanching in early autumn and onwards throughout the winter with protection. Too early sowing was the cause of your plants running to seed last year.

GROWING OLD CHRYSANTHEMUMS (*Idem*).—If you shake the plants out of their pots now and repot them in fresh compost after removing all but five or six suckers you may grow "large bushes" by the autumn, but the blooms will not be nearly so fine as those produced by young plants. The growths may be stopped as required until June, and the plants will need liquid manure after the pots are filled with roots. You had better grow a few young plants also in case the old do not succeed as well as you anticipate.

NAMES OF FRUITS (*W. Potten*).—The specimen is much bruised, and not easily identified, but it may be *Nelson Codlin*. (*Hy. Knowles*).—There is no doubt that the Apple you refer to was the *Early Red Margaret*. It answers to your description in every way.

NAMES OF PLANTS (*Ross*).—A dull-coloured form of *Oncidium sarcodes*. (*H. H. P.*).—*Fuchsia splendens*. (*Bodessa*).—It is a species of *Helleborus*, probably *H. viridis*, but the flower was too withered to determine it satisfactorily. The generic name is derived from two Greek words, and signifies poison food. (*M. A.*).—The name of the Moss misprinted "Theridium" last week is *Thuidium tamariscinum*. (*Ross*).—*Brassia Wrayana*.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

DEEP AND SPRING DRAINING.

HAVING in a previous contribution referred to the draining of heavy and strong soils it is now our intention to allude principally to those which would be most benefited by deep draining, and especially such soils as sands and gravels. These are more particularly subject to what we call bird's-eye springs—that is, when the water contained in the subsoil finds its issue at some particular point or points, although the remainder of the field or fields may be dry. We shall also have to refer to the draining of certain soils, upon which there is some difference of opinion amongst practical drainers as to the propriety of deep draining of flat and strong soils. We must, however, in considering this matter define as a rule the depth which may reasonably be styled deep draining. In order to lay the subject before the home farmer in a definite form, all draining will be styled deep which exceeds 4 feet in depth, whether the object is to cut off bird's-eye springs, or to relieve flat flying land of its superfluous water originating either in the subsoil or by rain water retained upon the surface.

Before entering into a description of the work of practical draining we shall call the home farmer's attention to the state of certain soils before draining, in order that he may the more readily distinguish the land which requires draining from that which has been drained by Nature, or in other words is land in its composition sufficiently dry for producing all farm crops without any outlay beyond that of manure, seed, and tillage. It is very unsatisfactory to notice the condition of much of the undrained land, especially during or after a winter of heavy rainfall. It will be observed that every vein of the soil is filled with water, and in consequence unable to receive benefit from the cheapest and best of all fertilisers—the showers of rain. Every succeeding storm of rain scours the surface and washes down the furrows in flooding streams, soddening and destroying the well-arranged surface, which had been obtained only by careful tillage and costly labour. The evil, however, does not end with the rains of the winter months, for the appearance of crops in the spring months are seldom much more promising, and although the sun may shine upon the cold and soddened land it is dead to its otherwise influential rays. The water locked in the soil, having no free passage downwards, can only be evaporated by the power of sun and wind, the heat which should warm the soil and invigorate vegetation escaping with it, leaving a heavy inert coldness, which is exhibited by the unhealthy growth of the crops. There are a variety of causes which prevent the land being drained, although it may be advantageous and profitable to effect it. It will often be found that owners as

well as tenants are too poor, too prejudiced, or too ignorant; but we venture to assert that draining land in a scientific manner and completing it in a practical manner will prove the broad basis of successful agriculture. We do not hesitate to say, as an encouragement to the home farmer and the proprietors of home farms, that draining will prove a safe and good investment for money and pay a far better interest than the purchase of more land. The land will be made to produce an increase of from 6 to 8 bushels of wheat per acre, and other crops in proportion, not forgetting the advantages obtained by feeding sheep with roots on the land, and at the same time effect a great saving of labour in tillage, &c.

In concluding the subject of draining heavy land in this Journal on October 2nd, 1879, page 278, we then alluded to the cutting of a drain 12 feet in depth as the only alternative by which a field of heavy land could be laid dry, very close shallow drains having proved useless; and we then promised on taking up the subject of deep or spring draining to state the manner of cutting the drain, and the difficulties we had to contend with. We now redeem our promise by stating that after sinking a hole to find at what depth the water laid we proceeded to dig a drain 12 feet in depth, that being the depth at which we found the sands which contained the principal supply of water. We had a fall of 20 feet to a brook, which we made the outfall for the drain. In cutting into the hill, however, we found a mass of exceedingly strong clay through which the water could not pass; it was in consequence held back and thrown up to the surface through worm holes and veins of sand, &c. Having decided upon cutting the drain 12 feet deep we employed a company of six men for the purpose, the foreman having been a drainer in our employ for many years who understood the draining of running sands perfectly. We obtained for use 4-inch horsehoe tiles, with flats for the bottom. We first of all took out the drain 4 feet wide at the top, and dug out the earth the whole length of the drain nearly down to the point at which the sand was reached. When this was done we had then three spits deep of running sands to move before we could lay the tiles. The three or four men and the tile layer worked as near as they could to each other, in order that the tiles may be laid so as to prevent the quicksands entering the tiles in a flood. This was prevented by a straw plug made to fit the tile and introduced as fast as each tile was laid, and only removed for laying in position of the next tile. The water and the sands ran so fast that only two or three arch tiles could be laid at a time after the bottom tiles had been laid, but sometimes only a single tile could be laid before the men were obliged to quit the drain, which they did immediately the scout men on the top called danger, and in quitting which they were obliged to be quick, the tile layer who was in the greatest danger taking the hand of the next man above, and was lifted out. On one occasion we happened to be present when the tile layer was no sooner lifted out than down foundered 20 or more tons of earth, and completely overlapped the position from which the men had only just time to remove. It is common in cases of draining running sand to have boards or a shifting wooden frame within which to lay the tiles and prevent the sands from running into the tiles, and sometimes for drains only 7 or 8 feet deep it is necessary to fix planks supported by cross stays to prevent accident, and keep the work open until it can be completed. This could not, however, be done at the depth we were cutting, for as fast as the running sands flowed out and undermined the upper strata, the weight of which was so great that no lateral support would keep it in position, because the whole body of the soil undermined sank perpendicularly, and would disturb and render useless any attempt to support the soil. This drain was very expensive, because so much ground had to be removed before a few tiles could be laid, that the land after falling in continually left the space at the top of the drain in some places 14 or 15 feet wide. Although it was a serious expense the drain at the outlet discharges a great quantity of water, and the field is now dry over the whole 4 acres, in consequence of cutting this single drain.

The drain to which we have alluded must be considered an exceptional case, for although we have often drained bogs and quicksands, yet we never had a similar instance. When we find sandy soils require draining from partial springs much care is necessary in order to prevent the sand from entering the tiles, and it is very rare that a drain well and carefully made ever becomes choked, especially if the run of water is strong. We have found that in most cases where stoppage has occurred the pipes have been filled with sand and slush at one part of the drain before the other part was completed. This has been occasioned chiefly by digging a part of the drain far in advance of the finished work, by which means a great quantity of water is brought down to the drain pipes where the men are at work finishing the bottom of the drain, and carrying with it large quantities of sand and mud, all of which running into the pipe has often entirely filled the pipes before the drain was completed. In such cases it is requisite to have several men at work in one drain following each other closely, beginning and finishing the drain as the work proceeds, one man doing nothing but putting in the pipes and laying upon them about 6 inches in depth of the strongest soil that can be

obtained near at hand, and pressing it on the pipes by walking regularly along the drain, to prevent the shifting sand passing through the joints of the pipes.

(To be continued.)

WORK ON THE HOME FARM.

Horse Labour.—The preparation of land for Lent corn crops and the earliest root crops, such as mangolds, kohl rabi, and Thousand-headed kale, will now fully employ the horses. On many farms the land is so encumbered with couch and twitch that the task to clean it will be a heavy one, and in numerous instances the assistance of steam power will be required if the various crops are to be sown in the right season. The proper period for sowing is a matter of so much importance that we must refer to it, and especially that of barley, for during our experience we have rarely seen a malting sample produced from a crop which was sown after the middle of April. It is therefore advisable to sow all the barley before that time, as other crops will pay better for sowing at a later period. Drege corn, composed of Black Tartarian oats and the coarse red-awned American barley mixed in the proportion of 8 bushels of oats and one bushel of barley as the seed for an acre of land, is the best mixture to sow when the produce is required for consumption on the home farm, as it may be sown as late as the end of April or the beginning of May. We have frequently obtained 11 and 12 quarters per acre from seed sown at those periods. White oats, too, succeed much better than barley for sowing after the middle of April, especially the White Canadian variety; for these not only come early to harvest, giving an opportunity for growing stubble turnips or planting Savoy cabbages after, but the straw furnishes fodder of more value for feeding cattle than any of the cereals. Potatoes should now be planted. The Scotch Champion is no doubt the best in cultivation for the chief crop for the winter keeping, but, like the Regents and some others, it produces an enormous bulk of haulm; the Magnum Bonum is also a free grower, but the Schoolmaster and the fluke varieties throw only a small proportion of haulm, especially the latter. When we have grown the true white-blossomed fluke they have produced so little haulm that we have often when earthing them up with the double mould board plough sown over the land just before the plough 1 lb. of turnip seed per acre, which will produce a crop fit for pulling for market before the potatoes are dug up. We have known 28 tons of turnips per acre pulled off the land before lifting the crop of potatoes. We have also proved during our long experience in potato culture that 6 bushels more of wheat and oats can be grown per acre after those varieties of potatoes which throw but little haulm than can be obtained when sown after those varieties which yield a gross and bulky crop of haulm.

Hand Labour.—The time of year is still right for carrying out the work of draining, therefore where it is required men will be employed in this work. The season, too, is now very favourable for paring and burning, and as so much of the land is foul after such a succession of seasons unfavourable to following more of this work will be done than usual. It also saves much horse labour, for after the one-horse paring implement has gone over the surface it is only necessary for the men to collect the turves and place them upon the fires as required. The system of stife burning is the best—that is, by continually laying the turf upon the fires in order to prevent the fire showing on the outside of the heap, and if this is carefully attended to the produce will be a valuable black and charred substance instead of a light white or red ash. The flocks of sheep will now require an unusual amount of attention, for in many cases the root food is so scarce that all sorts of devices will be resorted to for the purpose of eking out the root crops. The water meadows are this year rather barren compared with those seasons following a milder winter. Italian rye grass is coming on fast, and the crops of rye also. When the ewes and lambs enter upon these green crops after a period of scarcity the ewes frequently get a flush of milk, which often whilst the lambs are young cannot all be taken by them. Let this occurrence happen when it may, if the lambs cannot take all the milk injurious accumulations in the udder of the ewes will be sure to disorder the lambs. Sometimes the lambs will be taken with the white scour, at other times they will refuse the milk and be injured that way, which frequently results in a rheumatic affection shown by swollen joints. Lambs attacked in that way never recover and should be destroyed. Now these facts, which we have noticed during our practical experience, shows the necessity of great vigilance on the part of the shepherd, for whenever a lamb looks amiss its dam should be caught and examined, for in nine cases out of ten the ewe has too much or too little milk. In the former case the udder should be reduced by milking, in the latter case the ewe should be fed with linseed and oatmeal gruel once a day.

ARTIFICIAL INCUBATION.

THE interest in artificial incubation increases. So many experiments in it are now being made with every kind of incubator, that unless we are much mistaken the next season or two will prove whether the time and trouble expended upon it on a small scale is repaid. That on a large scale in commercial establish-

ments its results may be satisfactory there is little doubt. We are frequently asked to recommend incubators, but always decline to do so from not having had sufficient practical experience with them to form any conclusive generalisation. * A pamphlet now before us seems a very intelligent and very impartial guide to incubators in general, and from the accurate description which its author gives of the various machines now offered to the public a would-be purchaser can hardly fail to gather from its pages the information necessary to enable him to select the one most suited to his special requirements. In the introductory chapter some preliminary advice is given on starting an incubator, which we think well worth reproduction. Three things are enumerated as necessary for anyone undertaking to work an incubator—viz., knack, patience, and a proper place for the machine. It must be put in a place free from draught and from sudden changes of temperature. We are working one in a thick-walled stone building partially underground, and find this a suitable place.

The author then proceeds in seven chapters to describe seven of the best known incubators—viz., Boyle's, Penman's, Cashmore's, Watson's, Christy's, Voittellier's, and Howell's. We have not space to give any analysis of the accounts of these various incubators, but advise those of our readers who are interested in the subject to procure the pamphlet for themselves. A chapter follows on "How to Make an Incubator;" and Mr. Brown, very wisely we consider, does not encourage amateur contrivers to try their hand in their construction, considering the very low price at which machines of tried principle can be purchased. We would here observe that if the great makers wish to keep the manufacture in their own hands we fancy the chief thing for them to look to just now is good workmanship and seasoned wood. No doubt the sudden increase in the demand for incubators has given great temptation to supply hurriedly-made machines in cases of green wood. We have seen several such, and the annoyance caused by their constant cracking, and the damage done to eggs by the jarring of badly-fitted drawers, are enough to disgust any experimenter. The most important chapter is that of "Hints on the Working of an Incubator." The three things here mentioned as most necessary to success are—1, Regularity of heat; 2, Attention to details; 3, Condition and freshness of the eggs.

As to the first, the author specially advises everyone to master thoroughly the working of any incubator before putting eggs into it. We thoroughly endorse this advice. Of course it is very tempting if an incubator has been started one evening and is found by the next to have kept an even temperature to put in fifty eggs at once; but if this is a first attempt, it is most unwise to do so. Many circumstances occur to derange the temperature which are not at first foreseen, and there are also many little ways of correcting such derangements which can only be discovered after some days' experience. We may instance one. We have lately been working an incubator with a benzoline lamp. If this is replenished too freely the flame becomes too strong, on the other hand when it is nearly empty the flame is weak. This latter defect may be remedied by the simple mode of putting some very slight weight upon it, and so causing a little pressure of the fluid towards the mouth. 2, The details are of the greatest importance, specially that relating to the due supply of moisture, by which we try to remedy the absence of that "halitus" from the hen's body, which after all causes the chief difficulty in all artificial incubation. 3, The condition of the eggs. Their freshness is of high importance. We have found, and know that many other experimenters have done the same, that under exactly the same conditions in an incubator eggs from a strong and vigorous pen of birds where there are but two or three hens with the cock will hatch well, while all the chickens will die in the shell from weakly pens where there are too many hens, or where the breeding birds are too young. Ducks, the author states, can be hatched at almost any time of the year. A chapter follows on "Artificial Rearing," but we will come to this subject on another occasion. The pamphlet is throughout well written and full of common sense, and we strongly advise our readers to procure it.—C.

VARIETIES.

THE sum of £100 has been received from Messrs. Sutton and Sons, the Queen's Seedsmen, Reading, as a donation towards the Duchess of Marlborough's Relief Fund; and the same firm has presented 100 bushels of their disease-resisting potato, Magnum Bonum, to Mr. E. Purdon of the *Irish Farmers' Gazette* Peasant's Seed Potato Fund, besides a large quantity of the same variety to the Irish Church Mission at Connemara, for distribution among the Protestant and Catholic population who are in such distress in that district.

—THE REARING OF CALVES.—It may be laid down as a first proposition that a dairy farmer should raise at least as many heifer calves as are required to fill up the vacancies which occur year by year in his herd of dairy cows, and it is all the better if he has a few more than he wants for that purpose. Some people

* "Practical Artificial Incubation," by Edward Brown, 317, Strand, London, W.C.

contend that three-year-old in-calf heifers can be bought for less money than they can be raised for, counting in the risk; this, however, depends entirely on the facilities a man has for keeping young cattle so as not to interfere with his milk pastures. On all mixed farms it is commonly a simple matter enough to summer and winter young cattle so cheaply that it is better to raise them than to buy others for the dairy herd, and many farmers find it to their advantage to raise them for sale when "on note," or to fatten for the butcher. Judiciously carried out, rearing pays very well, and heifers raised on the farm are commonly found more suitable to it in after-life as milkers than others that are raised elsewhere and purchased; besides which, it is more than probable that rearing will always pay well in the British Isles, providing only that the stock is of good quality; for the demand for milk in our towns and cities is sure to go on increasing, and there will always be a brisk demand for store stock of good quality for grazing purposes. A careful breeder can but seldom buy dairy stock that will suit him as well as those of his own rearing; those he buys may, perhaps, be as well bred as his own are in every respect, but if they are only as well and no better bred, they will scarcely ever do as well in the milk-pail as those that have been reared on the farm.—(From "Dairy Farming," by Professor Sheldon.)

JAPANESE MANAKINS.—When these little birds first appeared in the market they created quite a sensation, which, however, soon wore out. The white or piebald Manakin has been bred in small cages through so many generations that very few of the original habits and manners of their ancestors remain. The first specimen I saw and possessed was believed by me to be partially blind, for the bird would allow me to handle him without stirring from his perch, and was peculiarly indifferent to the doings of the other small finches which inhabited the same cage. He would allow any one of them to drive him from his chosen perch or from the food-dishes, and did not live long. Since then I discovered that what seemed partial blindness was only helplessness. Subsequently acquired piebald Manakins I allowed to fly in a large aviary, but there they were completely bewildered. Through being bred by the Japanese in miniature cages, the imported white and piebald Manakins seem to be almost unable to fly, and consequently they are nearly as helpless in a large aviary as a young bird just leaving the nest. They tumble into the water, or hide in corners, or get into all sorts of scrapes. It is therefore advisable to keep these birds, if not always, certainly for some time, in a roomy cage by themselves, and then they may please their owner by their docility and tameness.—(Canaries and Cage-Birds.)

MANURES FOR POTATOES.—From a lecture delivered at one of the meetings of the Yorkshire Chamber of Agriculture by Mr. Coleman of Rical Hall, we cite the following:—Experiments with manures were tried in two very opposite years as to seasons. 1868 was a remarkably dry summer; 1869 was a much more favourable year for root crops; yet the results are comparatively identical, and they prove incontestably the superior results from a mixture such as that described below over Peruvian guano. Indeed the increase in 1869 was 8 tons 5 cwt., which, at £4 a ton, gives an increased value of £13 an acre; whilst the result in 1868 was even greater, but the extremely dry weather of the year was unfavourable to guano. It is not difficult to understand why the mixture proved so superior. Potash is a most important ingredient in the ash of the potato, and to a less extent in the haulm. Confining our attention to the tubers only, the total ash comprises about 0.71 per cent. of the whole, and of this one-half, as shown by Professor Way, is potash. In a crop of 10 tons per acre we have therefore 169 lbs. of ash, of which 79½ lbs. will be potash. Now, Peruvian guano is very deficient in potash, containing only about 3 per cent. Sandy soils are also wanting in potash, hence the remarkable result of its application. In both years the mixture of superphosphate, crude potash salts, and sulphate of ammonia produced a larger crop than 28 tons of well made manure, thus proving how extremely suitable the mixture was for the crop. We use both foldyard manure and artificial, and accordingly vary somewhat the mixture, which has hitherto proved very suitable, and which I can heartily recommend to all who grow potatoes on light poor sand. Now that the manure is made under cover, we find ten cartloads, weighing about 9 tons, quite as much as we can spare. On this we sow broadcast the following mixture:—2½ cwt. of bone phosphate, 1½ cwt. kainit (sulphate of potash), 2½ cwt. muriate of potash, 3 cwt. sulphate of ammonia, and 3 cwt. rape dust—total 6½ cwt. per acre. The sole object of the rape dust is to make the mixture work better. It is itself a very expensive manure, according to what it yields. This manure costs from 45s. to 48s. per acre, and I am satisfied that it is much better manure than 4 cwt. of guano. It should be borne in mind, as strengthening my views, that when these experiments were tried the quality of guano was better than it is now, and more reliable; yet, if we had dressed our crops, as so many of our neighbours do, with guano, we should have lost say from £10 to £12 per acre, which represents a very handsome profit.

LIMNANTHES DOUGLASSI FOR BEES.—I read Mr. Raitt's note on "Plants for Bees" with much interest. It may be of service to

some bee-keepers to know that *Limnanthes Douglasi* is grown very extensively for bees in some districts; it is not only useful for that purpose, but is a very pretty free-flowering annual. Seed should be sown at the present time in ordinary garden soil raked fine, and covered lightly, and the plants will flower in June onwards. For early flowering sow in September. The plants grow about 6 inches high, and have yellow and white buttercup-shaped flowers. It is a native of California.—W. ROBERTS.

BEE-KEEPING MADE EASY.—No. 2.

IN my first letter under the above heading an easy mode of feeding swarms for stocks in autumn was explained, and it was stated that 5 lbs. of bees, numbering upwards of 25,000, placed in an empty 16-inch hive and properly fed, make an excellent stock. Of course a swarm weighing 7 lbs. is much stronger and requires more food than a lighter one. The proper treatment of bees in autumn is of great importance and is the secret of success. It is hardly possible for anyone to fail in bee-keeping if he understands and practises the proper treatment of stocks in September. Autumn treatment consists in selecting hives with young sweet combs for stocks, giving them plenty of bees from other hives, or otherwise causing the bees of the hives by artificial feeding to set and hatch several large combs of brood in September. With ample and proper food and covering sufficient to protect them from storms in winter such hives are beyond danger, and need little or no attention till the month of March. Under any system of management with a fair share of sunshine such hives will not disappoint the expectations of their owners. It is hives like these that produce the great results we read and hear about. And it is not surprising, for while weak hives have a hard and often a long struggle for existence during the spring months, strong hives have bees enough to hatch large patches of brood, gather much honey, and prepare for swarming. A lady came here in September last year for the best hive in the garden. I met her the other day, when she told me that it had lost very few bees during the winter. For safety add certainty in bee-keeping, for great results with the least possible trouble and anxiety to the bee-master, I advocate the practice of strengthening stocks in autumn.

On the swarming principle of management this practice is easy, and this is one reason why I prefer that system. With many more hives than we require in autumn the bees of the honey hives are added to those selected for stocks, and thus they are made doubly strong. Again, bees thrive better and work faster in young combs than they do in older combs. In bee-keeping active observing men find that swarms, or bees in young combs, work faster than those that do not swarm. The heaviest hives I have ever known have been filled by swarms the first year. On the swarming system properly practised an apiary may be kept sweet, clean, and healthy.

Of late a great deal has been written about foul brood and the use of salicylic acid as a cure for it. It is my intention to review at some other time much that has been written lately; but at present I wish to say that this terrible, and I think incurable, disease is not a fast-spreading one in a hive. It may be infectious by contact, as some of the German apirians have long thought, and it may be carried from hive to hive as they say it is, but in individual hives it spreads by a slow process. So far as my experience goes it is rarely seen in swarm hives the first year. Last year I found in the combs of a virgin swarm hive at Carslruhe in Scotland a few cells of foul brood. These were pointed out to the bee-master, who destroyed the hive at once. If the hive had been kept for a stock as he intended the cells of foul brood would have multiplied during the breeding seasons of this year, and probably by September next it would be foul enough, but the few cells in it did not interfere in any perceptible degree with the progress of the bees last year. I have more faith in the prevention of foul brood than in its cure, and hence prefer young combs in stocks to old ones. Old combs frequently become too full of pollen. Hundreds and thousands of cells in the breeding parts of the hive become corked up half full of pollen, which greatly hinders progress. Let the hives with old combs in them be dismissed at the proper time from the apiary and their combs placed into the melting pot; let us have strong hives in autumn and swarms in May, so that all in the apiary may be youthful, healthful, and promising. The longer I practise bee-keeping, the more I notice and read the practice of others, the more confidence have I in the system now briefly indicated. Bee-keepers should remember that a little warm syrup given every night to bees will help and encourage them much now.—A. PERTIGREW.

THE VALUE OF DIFFERENT RACES OF BEES.

EVER since we have become acquainted with and introduced various foreign races of bees, the colour of some of which differs in a striking manner from that of our native bees, apiculture has become considerably more interesting and profitable. Many questions on which formerly opinions were very much divided are now capable of being solved in a simple way. If Baron Ehrenfels were still alive he would no longer venture to express

the opinion that worker bees might attain the age of the queen, and consequently live for several years, if they escaped from all the dangers to which they are exposed, for anyone who has introduced into a colony of bees a queen of a differently coloured race knows how soon the worker bees disappear, and will have noticed that during the busy time of the year it hardly takes six weeks for the old generation of bees to die out and a new one to appear and take their place. The question formerly so much discussed, and often with a good deal of bitterness, as to whether the queen is fertilised outside the hive only, and often at a great distance from it, and whether she also lays the eggs from which the drones originate, is now no longer raised since other races, and especially the Italian bees, have been introduced. Such an important rectification and enlargement of the theory of apiculture could not, of course, remain without a favourable influence on the management of bees, and indirectly contributed to the realisation of larger profits from the pursuit of keeping bees. But the introduction of foreign races of bees has also been of direct benefit, as many of them possess valuable qualities in which our native bee is more or less deficient.

The common black bee, which is met with in most parts of Germany, possesses many excellent qualities. It is indeed a honey bee. I consider it a very valuable peculiarity of these bees that their young queens lay no drone eggs during the first year, and the worker bees therefore make no drone cells either. When it was stated by Bruening in some of the earlier numbers of the "Bienenzeitung" that second swarms which had scarcely half filled their hive with comb had made remote preparations for swarming by breeding drones I could hardly believe it, as at that time I was unacquainted with the exceptional peculiarity of the heath bees, some colonies of which, with queens of the present year indeed, make preparations for swarming by producing drones. With the common German bee this is never the case, for which reason they do not swarm much, but they are honey bees in the proper sense of the word.

Their slight disposition to swarm, however, is not appreciated by those bee-keepers who aim at increasing the number of colonies in their apiary. The irritability of our native bees and also their great inclination to sting may frequently render bee-keeping very disagreeable. Although an experienced bee-keeper does not mind a few stings, still his patience is at last exhausted when he finds that his bees become so irascible that all work however pressing has to be suspended, and man and beasts in the neighbourhood are obliged to take to their heels, and when finally he may expect the police to interfere and order the removal of the hives to save the neighbourhood from being molested by the bees. It must therefore be considered a great advantage that we are now acquainted with races of bees which, although provided with a sting like our native bees, yet use this weapon but rarely, and only when very greatly irritated, and they are incapable of such an outbreak of rage as we have just mentioned. Of the most gentle bees may be named the Carniolan and Italian bees. The former, in addition to their gentle nature, show a great disposition to swarm. The latter are distinguished by their extraordinary industry, their capability of defending themselves against attacks by robbers, and the large quantities of honey they collect, in which they certainly surpass the capabilities of our native bees.

The advantage of the introduction of foreign races of bees, however, is not only to be found in the good qualities and superiority of the latter, but also in the difference in colour. Generally speaking we may grant the correctness of the maxim that success depends, not on the colour of the dress but on the capacity for work, still a decided difference in colour is also no mean practical advantage. A Hungarian bee-keeper, in a letter which I received from him, states that in his opinion the Italian bees are valuable chiefly on account of the remarkably bright colour of their queens, which greatly facilitates their being easily discovered among the bees. The following example will illustrate the advantage of being able to distinguish queens more or less pure from one another by their colour. Some of the colonies in my apiary at Carlsmarkt had become somewhat reduced in population during the winter, and in order to strengthen them I deprived several populous stocks in my distant Bankwitz apiary of a quantity of bees which I brushed into a box. When I got home I discovered to my regret that I had brushed off a queen with the bees. The weather being cold the operation had to be performed quickly, and as I had removed no combs from the brood room where the queen generally resides, I did not suspect the presence of the queen upon the combs which I took out of the hives. What was to be done now? Having taken bees from four and five hives, which colony did the queen belong to? I was not long in doubt. Of the colonies which I had deprived of bees two were pure Italians, one colony was tolerably pure, and one only contained rather dark bees. I guessed at once that the queen, which was also of a rather darkish complexion, belonged to this stock, and my supposition proved correct. When I returned to my distant apiary on the following day I found the colony in question without a queen, and on putting her back into the hive she was joyfully received, and thus the mistake was made good, which might easily have caused me the loss of a good colony.

The queen of a swarm might fall to the ground, a queen returning from her wedding trip might by mistake enter the wrong hive and still be liberated unhurt from the bees surrounding her, or she might slip down the comb unperceived during the temporary removal from the hive and be discovered afterwards. I need not therefore enter into further particulars to show how important it is to know with certainty which hive she belongs to. If we kept only one race of bees this would be a most difficult thing; but when at the same time we keep another kind, especially the strikingly differently coloured Italian variety, we possess so many distinguishing marks not only in the strength and form of body, but also in the difference in colour, that we are able to recognise with tolerable certainty among a considerable number of queens any queen which we have seen but once, and when found restore her to her colony.—(Signed) DR. DZIERZON.—(Translated from the "Eichstadt Bienenzeitung.")

OUR LETTER BOX.

KEEPING FOWLS (John Jones).—No variety possesses all the qualities you mention. Brahma Dorkings would probably suit you.

PREVENTING HAMBURGS FLYING (W. D. B.).—It is one of the amusements of Hamburgs to fly over any wall. Anything is preferable to cutting their wings, as that not only disqualifies, but it spoils their appearance. You must put netting on the top of your wall, the netting to lean over towards the inside. We have known birds confined by this that would have flown over any upright fence.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.					Rain.
	Barom. ter at 35 feet and Sea Level	Hygrome- ter.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature.			
		Dry.	Wet.			Max.	Min.	In sun.	On grass.		
1890.	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	In.	
March.											
Sun. 14	30.232	40.5	39.5	N.E.	44.5	49.1	38.1	73.5	32.7	—	
Mo. 15	30.263	43.0	40.7	E.	44.0	50.2	33.7	73.5	32.7	—	
Tu. 16	30.168	38.9	37.2	E.	43.4	50.2	33.6	73.5	32.7	—	
We. 17	30.132	45.5	40.5	S.E.	43.2	50.7	37.6	71.5	34.5	—	
Th. 18	30.237	44.4	41.3	E.	42.6	53.7	32.3	70.3	37.1	—	
Fri. 19	30.233	42.3	40.0	N.E.	42.3	55.5	36.0	70.0	37.1	—	
Sat. 20	30.232	32.3	32.3	N.	42.9	52.4	30.5	66.4	32.7	—	
Means.	30.258	40.8	38.9		43.5	51.8	35.4	71.8	34.4	0.00	

REMARKS.

- 14th.—Fair, pleasant, calm day, but cool.
 15th.—Cool fair day throughout; little sunshine in afternoon; bright starlight night.
 16th.—Cold dull morning; bright in afternoon; fine evening.
 17th.—Very fine bright sunny day, with cold easterly wind; clear starlight night.
 18th.—Thick white frost in morning; very fine with bright sunshine all day; cold east wind still prevailing; bright moonlight night.
 19th.—Slightly misty in morning; fine and bright sunshine from 10 A.M. slightly warmer, not so much wind; clear starlight evening.
 20th.—Very cold morning, with thick white fog; clear and bright throughout the day.
 A true March week; easterly wind, high barometer, little cloud, no rain, bright sun, and generally frost at night.—G. J. SYMONS.

COVENT GARDEN MARKET.—MARCH 24.

THERE is a complete stagnation in our market for best goods, Grapes though short supply being cleared only at lower prices.

FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples.....	½ sieve	3 6 to 4 6	Nectarines.....	dozen	0 6 to 1 0
Apricots.....	dozen	0 0 0 0	Oranges.....	½ 100	0 0 0 0
Cherries.....	box	0 0 0 0	Peaches.....	dozen	0 0 0 0
Chestnuts.....	bushel	12 0 16 0	Pears, kitchen.....	dozen	0 0 0 0
Figs.....	dozen	0 0 0 0	Pears, dessert.....	dozen	0 0 0 0
Filberts.....	½ lb.	0 1 0 1	Pine Apples.....	½ lb.	1 0 2 0
Cobs.....	½ lb.	0 1 0 1	Plums.....	½ sieve	0 0 0 0
Gooseberries.....	½ sieve	0 0 0 0	Raspberries.....	½ lb.	0 0 0 0
Grapes, hothouse.....	½ lb.	6 10 0 10	Strawberries.....	½ ca.	0 0 0 0
Lemons.....	½ 100	0 10 0 10	Walnuts.....	bushel	0 0 0 0
Melons.....	each	0 0 0 0		½ 100	0 0 0 0

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Artichokes.....	dozen	2 0 to 4 0	Mushrooms.....	pottle	1 0 to 1 5
Asparagus.....	bundle	8 0 10 0	Mustard & Cress.....	punnet	1 0 to 1 5
Beans, Kidney.....	dozen	1 0 1 0	Onions.....	dozen	0 0 0 0
Beet, King.....	dozen	0 0 0 0	Pickled.....	quart	0 0 0 0
Broccoli.....	bundle	0 2 1 6	Parsley.....	doz. bunches	0 0 0 0
Brussels Sprouts.....	½ sieve	0 3 0 6	Parsnips.....	dozen	1 0 2 0
Cabbage.....	dozen	1 0 2 0	Peas.....	quart	0 0 0 0
Carrots.....	bunch	0 4 0 6	Potatoes.....	bushel	4 0 0 0
Capiscums.....	½ 100	1 6 2 0	Kidney.....	bushel	4 0 0 0
Calliflowers.....	dozen	0 3 0 6	Radishes.....	doz. bunches	1 0 0 0
Celery.....	bundle	1 2 0 0	Rhubarb.....	bundle	0 0 0 0
Coleworts.....	doz. bunches	2 0 4 0	Salsify.....	bundle	1 0 0 0
Cucumbers.....	each	0 1 2 0	Scorzonera.....	bundle	1 0 0 0
Endive.....	dozen	1 0 2 0	Seakale.....	basket	2 0 0 0
Fennel.....	bunch	0 3 0 0	Shallots.....	½ lb.	0 0 0 0
Garlic.....	½ lb.	0 6 0 0	Spinach.....	bushel	0 0 0 0
Herbs.....	bunch	0 2 0 0	Turnips.....	bunch	0 0 0 0
Leeks.....	bunch	0 3 0 0	Vegetable Marrows.....	each	0 0 0 0

WEEKLY CALENDAR.

Day of Month	Day of Week	APRIL 1-7, 1880.	Average Temperature near London.			Sun Rises.	Sun Sets.	Moon Rises.	Moon Sets.	Moon's Age.	Clock before Sun.	Day of Year.
			Day.	Night.	Mean.							
1	TH	Linnean Society at 8 P.M.	65.0	54.4	44.7	5 36	6 33	12 5	10 15	21	2 47	88
2	F		67.5	56.7	48.6	5 24	6 23	2 15	10 15	6	3 29	89
3	S		67.1	55.7	46.4	5 29	6 25	2 40	11 25	28	3 11	90
4	SUN	LOW SUNDAY.	64.7	55.7	46.3	5 29	6 26	3 17	0.55	24	2 43	91
5	M		67.0	56.7	46.0	5 27	6 28	3 28	2 13	25	2 36	92
6	TU		67.0	56.7	47.2	5 25	6 40	3 54	2 29	26	2 18	93
7	W	Society of Arts at 8 P.M.	57.7	56.5	47.3	5 28	6 41	4 12	4 41	27	2 1	94

From observations taken near London during forty-three years, the average day temperature of the week is 54.9°; and its night temperature, 54.1°.

ROSES.



ROSE who call themselves rosarians write, speak, and act as if the Rose were no ordinary plant, and as if it were preposterous for an ordinary gardener to pretend to know anything about it. "He can grow the vulgar Cabbage, or even a bunch of Grapes, but as for exhibition Roses, let him not mention them. There is a special class of plebeians of the Rose family which we will condescend to throw to him, for which he must be extremely grateful, but let him not expose his ignorance by pretending to know something about exhibition Roses." My kind friend and neighbour Mr. Hinton, who I am happy to say is not narrow-minded on this or any other subject, previous to the last election of Roses, having had ocular proof that I could occasionally grow a decent Rose, did me the honour of forwarding the election forms with a request that I might at any rate fill-up the one for Garden Roses. I thought the matter over for several days, and came to the conclusion, that leaving out Teas and Chinas I was only acquainted with one kind worthy of being called a garden Rose, and that is a semi-double climbing variety of which I do not know the name, but which flowers in clusters of pale pink all through the summer and autumn. None of the so-called Hybrid Perpetuals are worthy of a place in a summer flower garden which is intended to be kept gay. They can bear no comparison, for instance, with a Japanese Anemone, a Rudbeckia, or even a Canna. The rosarian, of course, after his fortnight's bloom is over lives on his memories of the past and his hopes for the future; he thinks of the prize he might have won if his Maréchal Niel had not been too far gone, or if he had deferred cutting his Alfred Colomb for another half hour. I do not wish to deprive him of his pleasurable excitement, for disappointments and hopes are the natural stimulating food of every class of cultivator, but we must not expect everybody to be enthusiastic over our own especial crotchets. Nothing can be more offensive to the ordinary eye in the month of August than a Rose exhibitor's paradise—i.e., thousands of bare sticks and heaps of farmyard manure. If these are necessary, have them by all means, but not immediately under your parlour window, where a bed of Mignonette or a Heliotrope plant would be better appreciated by the majority of the household.

The Rose differs from most other flowers in this respect, that it loses none of its beauty by being severed from the plant. Three good flowers with their own beautiful fresh foliage placed in a plain glass vase will look as well or better than they did on the plant. It is not so with the Carnation or the Pink. If you cut either of these you will have a difficulty in finding foliage which will look well with them. Their own certainly will not, and Nature seems to have borne this in mind when she decreed that the foliage of the Dianthus family generally should be kept in the background. The Rose as a cut flower is perfect; the Hybrid Perpetual Rose in a dressed garden is too transitory, and according to the fashionable mode of culture too un-

sightly. A Rose for cutting should have good texture, be beautiful in form and colour, and should possess a refreshing perfume. None of these points except the last and most important are despised on the exhibition table; therefore it may be broadly stated that the best exhibition Roses, supposing their habit to be free and good, are the best Roses for everybody.

But though I recommend the general grower to learn from Rose exhibitors what are the points of a good Rose, I would caution him against imitating the exhibitor's method of culture, for this in my opinion has done much towards banishing the Rose from the gardens of small occupiers. I think it may be stated as an indisputable fact, that with all our rosy writing, Rose exhibiting, and Rose societies, that Rose culture in the broadest sense is sadly on the decrease. I want to see Rose-growing simplified, to have Roses abundant in our cottage gardens once more, from which there is a danger of their being banished by the writings and examples of the so-called rosarians. When it is the fashion for the parson and the doctor to have Roses on stilts, of course the parish clerk and the doctor's boy will imitate them, and others will quickly follow in the wake of the parish clerk and the doctor's boy, and the consequence is that glorious old Rose bushes are sacrificed for very sorry and short-lived substitutes. Grow the new Roses by all means if they are better than the old (though I could name a few high-placed favourites which are not deserving of their present exalted position, Capitaine Christy to wit); but why stick to small plants on foreign stocks, or on native stocks too much mutilated to have five years' life in them? Hybrid Perpetual Roses will grow satisfactorily on dwarf Briars whether raised from seed or cuttings, but they will not do permanently well anywhere worked on any other stock. The best permanent results follow when they are on their own roots, but as striking Rose cuttings is hardly to be expected of the average cottager I will tell him of an easier, surer, though perhaps rather slower method which I have seen practised by many cottagers in Lancashire. It is simply pegging-down vigorous shoots their full length in autumn, and covering them, except the extreme points, with a little soil, such as road grit. They will generally emit roots and a shoot at every joint, and if a notch is cut through the bark on the lower side they are almost certain to do so. They must be left in the position they are pegged to for twelve months, by which time they will generally have become stronger plants than can be raised in any other way.—WM. TAYLOR.

CUCUMBERS AND MELONS.

IN the majority of instances the seeds of the above, especially for the principal crop of Cucumbers, have long been sown, but possibly a few remarks on varieties may still be acceptable to some. Although both are appreciated here, neither are in great demand. However, being fond of growing them, I always, in spite of suitable space being rather limited, contrive to grow a goodly number of Melons especially, including many novelties both named and unnamed, the latter in some instances being superior to the

former. Varieties of both Melons and Cucumbers undoubtedly wear out. Were it otherwise, the host of novelties annually brought forward would, with a very few exceptions, be altogether uncalled for. As it is they last a time, helping to swell the long lists in the trade catalogues, and eventually are grown by a few admirers only. It is a mistake to pin one's faith to any one variety, as it is difficult to prevent its deterioration.

As a rule seed saved in private gardens is seldom true to name, as when a number of varieties are grown it is difficult to preserve the purity of any on account of accidental crossing. Even in the hands of the trade growers they are seldom so good after a few years as when sent out. The choicer kinds of Cucumbers especially soon deteriorate. I invariably find the produce of the plants raised from the first packet of seed superior, and for this reason carefully preserve them, always sowing the seed sparingly—*i.e.*, not much in excess of the number of plants required. I have never done much good with either Tender-and-True Cucumber or Eastnor Castle Melon since exhausting the first packet of seed, nor do I blame my seedman for this.

Of Cucumbers the most useful varieties I have yet had an opportunity of growing are three raised by Col. Taylor, Montrose, Weston Park, Bath. All possess qualities which render them very desirable additions to the various types to which they belong, being very vigorous, productive, and of excellent quality, and I trust that Col. Taylor will give the gardening fraternity an opportunity of buying them.

Montrose Seedling, or No. 1, is a remarkably productive frame Cucumber, requiring but little heat to bring it to perfection. I had it in a frame till very late in the autumn, long after others had succumbed, and the fruits were good to the last. It is the result of a cross between Lord Kenyon's Freebearer and Sion House, the fruit being rather short without any neck, and of good quality. It would really be invaluable to amateurs.

No. 2 was obtained by crossing Lord Kenyon's Freebearer with the Duke of Connaught (Suttons'). It is an excellent combination of both parents, and is particularly good for house work all the year round. The fruit are produced freely and continuously; they are of medium size; very shapeable, of good colour, and much liked by all who have tasted them.

No. 3, however, is the most prized by me, it being in every respect a really excellent variety. It was obtained by crossing Montrose Seedling with the Duke of Connaught, and combines in itself the good qualities of both, as it is very vigorous, hardy (doing well in frames), and prolific. The fruit are long, handsome in shape, and I never tasted a better Cucumber. It outlived all others both in house and frames—a good proof of a strong constitution.

Previous to the receipt of these varieties I used to grow the Duke of Connaught, and was well pleased with it, finding it very useful. Kelway's Paragon (Carter & Co.), I grow for the earliest supply, cutting it away as the others extend. It is wonderfully productive, and the fruits are of good length, shape, and quality. Those who grow this variety will do well to thin out the fruits freely, or otherwise the plants will soon succumb from exhaustion. Telegraph is, perhaps, still the most popular variety of Cucumber, but I consider it worn out, as it collapses long before other varieties. It is very liable to be infested by red spider, another proof of debilitated constitution. Model (Carter's), is another good variety whether for exhibition or table purposes. This season I am growing Sir Garnet Wolseley, being privately informed that it is in every respect remarkably good.

MELONS I grow principally in large pots. One reason for this is because the house is not adapted for the work on account of the peculiar arrangement of hot-water pipes. I am not sure, however, that I care to grow them differently, as we easily obtain four fair-sized fruit from each plant, and we run no risk of injuring the plants through having to pinch back much excessive growth. The quality, too, of the fruit seems improved by this treatment. Of Melons, again, I consider myself fortunate in obtaining several excellent unnamed seedlings from Mr. G. Abbey, which that well-known gardener has by judicious and not haphazard crossing succeeded in obtaining. Out of the batch I give the preference to a scarlet-flesh variety, its parentage being as follows:—Beechwood × Read's Hybrid × Victory of Bath, and a green-flesh of the same parentage. Both are free-growing, not requiring a high temperature, as my best fruit were grown over a tank in a Peach house, very fruitful and free-setting, and the fruits beautifully and coarsely

netted are of unsurpassed quality. Grinkle and Pine Apple are both vigorous growers, the fruit being handsome and of good quality. Neither, however, did so well as the above-mentioned pair. Mr. Abbey evidently does not aim at obtaining large fruit, rightly preferring quality to size.

Gilbert's Victory of Bath is good for early work, but unfortunately is usually quite smooth and not prepossessing. Netted Victory (Gilbert), I was in hopes would be a netted Victory of Bath, but in this I was disappointed, as although an excellent variety it is quite distinct from the latter, the only resemblance that I could trace being the great length of foot-stalk. With me it proved a weak grower, and the fruit at first did not come well netted, but was better later on. The fruits were of good size, quite round, the flesh being remarkably thick and of the very best quality. I can strongly recommend two varieties for early work, either in frames or houses—*viz.*, Dell's Hybrid (Carter & Co.), and Earl of Beaconsfield (Sutton and Sons). Victory of Bath evidently played a very important part in the parentage of both of them, and I find them quite as easily grown as that popular variety. They are of good size and quality and become well netted.—W. JGGULDEX.

NOTES FROM MY GARDEN IN 1879.

It was impossible in a season so disastrous to horticulture as that through which we passed last year that it should not injuriously affect a flower which, like the Gladiolus, originally came from the southern part of Africa, and whose capability of resisting adverse climatic influences has not been increased by the very high breeding to which it has been subjected at the hands of hybridisers. Probably the experience of growers varies in this respect as in others. Thus my old and valued friend, Mr. Banks of Shobden near Deal, had the most fearful loss he has ever experienced, and his estimate was that in the last two years he has lost nearly thirty thousand bulbs, including seedlings, by what he, like myself, calls disease. On the other hand another friend, Mr. C. F. Barrell of Mercia Lodge, Spalding, tells me he never had such fine blooms, and indeed has promised to give the readers of the Journal the benefit of his experience. I can quite believe that the Gladiolus will do well at Spalding. Its affinity to the Dutch lands where bulbs are grown is great. Is it not amongst the "parts of Holland in Lincolnshire" (so called in the maps)? And do we not know that vast quantities of Crocuses, Snowdrops, and other Dutch bulbs are grown for the London market about here? This by the way; but wherever I have met Gladiolus growers I have heard from them the same tale—very great losses, and a bloom so late as to be very defective; many kinds not blooming at all, and others being but shadows of their former selves.

My own experience was peculiar, and indeed every year I seem more and more puzzled about them. My stock for planting in 1879 consisted of only about three hundred roots exclusive of a few seedlings. It was composed of some French roots imported, some of the French varieties I had harvested myself in 1878, some few sent me by my friend Mr. Banks, and a few of Mr. Kelway's new varieties which he very courteously sent me to try. I selected for the beds a piece of my garden in which a Gladiolus had not been planted for eleven years, and which during that time had been used for various vegetable crops; and before planting went carefully through the roots, putting aside any that seemed to me at all likely to be diseased, and selecting only sound corms. Well, of these a large number, notwithstanding all my care, never came up at all; and on examining them I found that in some instances they had started for growth but had been eaten off, while in other cases they had never made the slightest attempt at growth. The unsound ones I placed on the floor of my greenhouse on some sand, not believing they were of the slightest use, but, strange to say, many of these started into growth. I took them up when they had pushed a few roots, planted them out, when they not only grew but many of them produced good healthy corms. On any theory this is a puzzle. If exhausted, how was it possible to produce a healthy corm? while if diseased the solution is as difficult.

I planted this year rather deeply—about 5 inches, and in my somewhat light soil I think this is better. Mr. Kelway was good enough to pay me a visit, but, I regret to say, during my absence, and must have been amused, although he was too polite to say so, at the small number I grew, and suggested that I should try this season a part of my garden where the soil is somewhat more tenacious, and this I have done and hope for better results. Mr. Kelway's own culture is enormous.

This year, he tells me, he hopes to have twenty acres of them, and I hope that I may be able to see them and tell my story to the readers of the Journal. He has raised a very large number of truly grand flowers, has succeeded marvellously in their culture, and has a large and rapidly increasing sale for them.

I must now say something with regard to novelties. There were sent out by Messrs. Souillard et Brunelot (M. Souchet's successors) nine varieties as follows—Africain, Atlas, Eglantine, Esmeralda, Hesperide, Matador, Ovide, Pomona, and Pygmalion. I have often said that the idea of a good *Gladiolus* cannot be the same in France as with us, and this list bears me out. The highest priced one is Hesperide, and it is by no means in my opinion up to our English standard, nor is it as good a flower as several others in the same list. Thus, *Africain* is very distinct, very dark, bearing some likeness to Mr. Kelway's Egyptian King, and apparently a seedling from Jupiter; the colour an intense scarlet, but very largely shaded with a slaty brown with white lines and large white spots, and is without doubt a very remarkable flower. *Matador* is another, deep carmine red, with white lines, and apparently a very vigorous grower. *Ovide* is a very fine flower, a carmine ground with lilac, and flaked on the edges with red, a white line in the middle of each petal, and with white spots. *Pygmalion* is another fine flower, cerise red flaked with deeper red, white spots with violet lines, and each petal marked with a pure white line in its centre. *Atlas* is also a fine flower. Indeed the whole set are much superior to those of the preceding year, which did not contain one flower of surpassing merit, although of course there were several very pretty, but they did not come up to our standard.

Mr. Kelway sent out eighteen if I recollect rightly, and amongst them were certainly some very grand flowers. Such varieties as *Orange Boven*, buff, lighted and flaked with sulphur and with a yellow centre; *James Kelway*, crimson edged with maroon, and with a white line on each petal; *Lord Ilchester*, cerise, white centre; *Mrs. D Ombrain*, white tinted with lilac rose; *Pithys*, light red with pure white throat, and white line on each petal, are flowers which must keep up Mr. Kelway's renown as a raiser, as they are equal to any that have reached us from the other side of the Channel, and indeed superior to the greater number of them. We cannot write upon the *Gladiolus* without expressing the regret that all lovers of this flower must feel, that all metropolitan exhibitions of it seemed to have ceased, for the only one at which it appears, the Crystal Palace Fruit Show, is fixed for so late a date that very few have a chance of exhibiting.

I have but little to say of Carnations and Picotees. Having been obliged to abandon their growth in pots I could only have a couple of beds of them, and a worse season for them I have never seen. They were with me very late in blooming, and the difficulty of obtaining grass for layering was very great. Those who grew them in pots and had the advantage of glass could do better, but from all quarters the same statement came—plants that were sent out had many of them hardly any roots, and would be of little use for blooming. Thus 1879 has left its legacy to the florist as well as the agriculturist; and let us hope that this "heritage of woe" may be but the precursor to brighter and better days.—D., Deal.

MARÉCHAL NIEL ROSE A NOISSETTE.

I HAVE a plant which now has two bunches of four flowers each, ten or twelve bunches of three each, about thirty bunches of two each, and a very large number of single buds, which vary in size from that of a pigeon's egg to small peas. The Rose is planted out on a fence and brought into a small greenhouse similar to a Vine. I had about 130 flowers on the plant last year, many of which when not quite opened would not go into a 5-inch pot, and this year I think there must be at least three hundred buds. The plant made very strong growth last autumn, and this year's bunches of buds are on the strong shoots of that time.—H. E. MONK, *Taristock*.

WINTERING ECHEVERIAS.—One of the simplest methods of preserving *Echeveria secunda* glauca throughout the winter is the plan adopted by Mr. Child at Garbrand Hall. On lifting the plants from the flower borders about the month of October three of them are tied together by the roots and suspended in rows to the back wall of a lean-to greenhouse, and in this elevated position without any attention whatever they are

kept in good preservation until the weather allows of their being planted out of doors, when for a short time they are simply protected from cold winds, frosty nights, and bright sunshine. A few days since I saw a large quantity at Ewell that had been preserved in the above way, and the plants were as fresh as in summer. The method is so simple and within the reach of everyone that I can confidently recommend it. This example suggests that they may be preserved if tied together in a similar way to ropes of Onions.—J. W. MOORMAN.

PEACH PRUNING.

At length "J. S. W." gives us something tangible in support of his arguments—namely, an account by Mr. Coleman of the system of culture followed at Floors Castle for nine years with success. I feel bound to accord due respect to the opinions of a fruit-grower of such undoubted excellence, and, judging from what he says, it must be owned that with trees in full vigour a certain proportion of stout well-ripened fruiting wood may probably be left unshortened with advantage. Thus much I willingly concede, but no more; for observation and experience enable me to say positively that the indiscriminate application of the non-shortening system in practice is fraught with much risk—risk of the nature I have already set forth—small fruit, incipient exhaustion, and premature decay. This is no mere speculation, for I have repeatedly seen it going on, and can only account for it by the conjecture that it is either a want of resolution or of judgment that leads to the retention of shoots very little larger than a straw, with single blossom buds and only a terminal wood bud. How can fine fruit or stout growth be expected from such wood?

To inexperienced fruit-growers who are at all perplexed by this discussion I would say, Pin your faith to no system of lime-and-rule culture; watch the trees closely, and by the exercise of a little common sense you will soon understand their requirements. Resolutely cut away all weakly growth at the winter pruning, retain no crowded growth in summer, and yet keep sufficient to afford a choice for the crop of another season. Do not mind rampant growth. A visitor lately asked why I retained some very long robust growth of last year—hop-poles he called them. "That is how I get plenty of triple buds and fine fruit," I answered, pointing to the stout fruiting laterals upon similar wood left last year.—EDWARD LUCKHURST.

IXORA CULTURE.

IXORAS can be successfully grown in an ordinary stove temperature with ease provided the temperature of the house in winter does not fall below 58° or 60°, with a gradual rise as the season advances and the plants commence growth. Bottom heat is not really essential to success, and I believe plants that are in robust health can be grown well without it, although they do not make quite such rapid progress in their early stages, nor can they be brought into bloom quite so early without bottom heat. It is important to start with healthy young plants, as when *Ixoras* become stunted they are soon attacked by insects and seldom start again into active growth. Some varieties flower very freely in a young state, and what can be more beautiful for decorative purposes than a plant with three or four shoots and as many fine trusses of flowers? One important point connected with their cultivation is cleanliness. The plants must never be allowed to become infested with insects. Red spider, thrips, and mealy bug thrive upon them, and if the latter obtain a firm hold upon them when the flowers are visible much damage is often done in removing them. Perhaps thrips are their greatest enemies, as they infest the under side of the leaf and do much harm before being noticed. Tobacco water will, however, soon destroy them. It is a good plan to give occasional cleanings with water, laying the plants on their sides and thoroughly washing them with the syringe.

Ixoras are propagated by means of cuttings, which strike freely at almost any season of the year. If rooted in autumn or early spring the cultivator has a long season before him. They strike quickly when plunged in bottom heat in a close frame or under a bellglass. Strong cuttings should be inserted singly in 2-inch pots, the soil being sandy peat, and when the pots are full of roots the young plants should be transferred into 4-inch pots, employing similar soil. The plants succeed well in loam or peat and sand, or a mixture of both. I prefer the latter principally, because *Ixoras* dislike being disturbed at

their roots, and the peat remains in a healthy condition much longer than the loam. Potting must be done carefully and with the least possible injury to the roots. The pots should be carefully removed, and any loose soil on the top of the old ball, and that will be found sufficient, as any attempt to disentangle the roots when the object is to obtain a good specimen will only result in checking the progress of the plant. The plants should never be allowed to become root-bound until they have attained a sufficiently large size. When the pots are full of roots *Ixoras* require liberal feeding, and can be kept in good health for a long time in the same pot. When the young plant is established in the 4-inch pot the points of the shoot must be pinched out to cause a branching habit, in order to form the base of the future specimen. This pinching must be continued when the plant has grown a few inches, and by the end of the first season it will be a bushy plant in a 6 or 7-inch pot. In winter it must not be allowed to suffer by want of water at the roots. In early spring when root-action has commenced the plants can be transferred into pots a size larger, and if not allowed to bloom the second season they should by autumn be good-sized plants in 10-inch pots. Time will be saved in growing a specimen if the bloom is sacrificed and the proper stopping of the shoots attended to. If wanted to bloom the shoots must extend, and the trusses of bloom will soon become visible in the ends of the shoots, which will afterwards require cutting back, and much valuable time will be lost.

Ixoras require little if any staking except young specimens, and then only to furnish the base of the plant. In the case of large plants for exhibition a few stakes may be required to steady the plant, but if the specimen has been well and carefully managed few are necessary. The points should again be taken out the third season, and when in growth repot the plants in 12-inch pots. The plants should now possess a good number of shoots, and can be again pinched if deemed expedient, and afterwards if the shoots are allowed to extend they will by autumn be presentable specimens, carrying a good regular head of bloom. To accomplish this, if the shoots are irregular in growth they must be tied down as soon as the trusses of bloom can be seen, and in time before the flowers expand for their heads to turn well up. While in active growth *Ixoras* require liberal supplies of water at the roots, also frequently syringing the foliage to keep it clean. Some cultivators will not allow water upon the foliage of these plants during winter, and say it is to a large extent the cause of the leaves turning brown as if scorched or scalded. This I have never found the case with our plants, and I am not in a position to say from what cause it may arise, but I believe it is due to a high temperature in winter, insufficient root-action, or negligent watering, each of which might lead to such results.

To induce plants to flower in small pots all that is needed is to allow the shoots to extend. If one truss only is required the cutting after being rooted should not be stopped, which must be the case if more are required. *Ixora Duchessa* of Teck appears very free-flowering in a small state, and will on that account be valuable for blooming in small pots. The following will be found excellent:—*I. coccinea* *superba*, *I. amabilis*, *I. Dixiana*, *I. Williamsii*, *I. Prince of Orange*. *I. Colei* is also a fine white form for exhibition purposes.—WILLIAM BARDNEY.

CUCUMBERS AND GRAPES AT NUTGROVE, ST. HELEN'S.

THERE are here three houses devoted to Cucumbers, two of them built specially for that purpose, each 50 feet long, span-roofed; the other one erected as a Pine house, about 20 feet long. The plants are all from seed of the gardener's own saving, and the result of crossing three celebrated varieties. They are the most prolific of any I have ever seen, producing from five to twelve fruits at a joint, and, what is most surprising, nearly all grow freely, very few indeed turning yellow or damping off. The shape, size, and quality are excellent. The growth of the plants, too, is very strong—almost rampant, in spite of the enormous crop they are carrying. Several gardeners from the neighbourhood of Liverpool have been to see them, and are astonished, returning in a few days with other gardeners to be likewise astonished. Cucumbers have for many years been well and profitably grown here, but this new hybrid far surpasses all grown in previous years. Three years since the Cucumber disease appeared in these houses and

sorely perplexed Mr. Smeatham the able gardener; he called me in to look at them, and I advised him to clear all out and start afresh, to which course he gave a decided negative, at least until he had tried other means. He did save them except a few of the first attacked, and they afterwards did remarkably well, and the disease has never since appeared.

The vineries also are worthy of notice. They are five in number and of considerable extent. Black Alicantes are the most largely grown, also Black Hamburgs; but from the great promise of a few plants of Gros Colman recently introduced, that variety will most likely to a great extent supersede the others. Last year, notwithstanding the wretched weather, all the Vines bore a heavy crop of fine Grapes, the colour and finish being perfect, which is attributed to the liberal use of whitewash on the back walls, &c., the reflected light from which the gardener believes to have great influence upon them. A pleasing feature in the longest vinery is a bank of rockwork at the back, which is gay all the year round with plants in pots inserted among the Ferns with which it is planted; but what strikes the professional eye most is the narrow borders in which the Vines are growing—only 5 feet 6 inches wide, but wide enough if one may judge from the strength of the Vines and the heavy crop of first-class fruit they produce annually.

There is also a good-sized lawn with flower beds and kitchen garden in good order, and also a small semicircular conservatory, which is chiefly remarkable as a specimen of horticultural architecture of a bygone age, but with some good plants in it. In conclusion, I may add that this is merely a single-handed place, and I think is a fair specimen of what may be accomplished by an able man. The utmost confidence exists between master and gardener, now unbroken for nearly twenty years.—J. J., *Lancashire*.

HARDINESS OF GREENHOUSE FERNS.

It may interest some of your readers to know that the following Ferns have survived the past winter uninjured, planted out in an unheated house:—*Pteris cretica albo-lineata*, *P. quadriaurita*, *P. scaberula*, *Davallia novae-zealandiae*, *Asplenium bulbiferum*, *Adiantum cuneatum*, *Todea pellucida*, *T. superba*, *Athyrium Goringianum*, *A. pictum*, *Lygodium scandens*, *Doodia caudata*, *Woodwardia radicans*, *Pteris serrulata*, and *Hymenophyllum tunbridgense*; but *Lomaria gibba* and *Nephrolepis tuberosa* were killed by frost.

The small house in which these Ferns are grown is a lean-to having a N.W. aspect. There is no glass but in the roof, and that is tinted with a light shade of green. The floor, which is gravelled, is about 15 inches below the ground level. The back wall had wooden plugs driven in it at short intervals, and 3-inch-mesh galvanised netting stapled to these and beginning next the floor. The interstices of the netting were stuffed with common moss, and the space between it and the wall filled with prepared earth. Each course of 2 feet was finished in this way until the top of the wall was reached. Hardy Ferns in variety were introduced between the meshes, and what would have been an ugly blank wall is now a luxuriant mass of Ferns and green moss. This and the gravel floor are also excellent evaporating surfaces. No water was given from October until the present week except to the Filmy Ferns. I use for these a useful little apparatus called a spray distributor. The other walls are almost hidden by the rockwork, which is of sandstone on a foundation of rubble, with roomy pockets between. Of course, the Filmies have the choicest of these, and seem grateful for the consideration shown them. *Pteris scaberula* is a gem grown in this way where it has ample room to run about. I also find *Isoetes gracilis* quite hardy and effective, as is *Saxifraga sarmentosa* when kept within bounds. *Selaginella denticulata*, *S. apoda*, and one other the name of which I do not know, have also survived uninjured. Slugs were troublesome for the first few months after the house was planted, but searching for them by night has much reduced their numbers.—G. H.

APONOGETON DISTACHYON.—A few weeks ago I obtained tubers of this plant from Mr. Hooper of Covent Garden. Placed in good sandy loam in a tub in the greenhouse and covered with 8 inches of water they are now in flower, and the contrast between the fresh green leaves and the ivory white flowers is lovely. One tuber planted in an inverted cloche 12 inches in diameter bears four spikes. For a tub in a cool house or a bellglass in a sunny window this plant is

most successful; it is also hardy, and so does well in ponds and tanks. It is cheap and sure to please. I find that visitors often pass far more showy flowers to admire this fragrant aquatic.—DUBLINENSIS.

THE EFFECTS OF THE WINTER OF 1879-80.

AN interesting notice appears in the "Journal des Roses" by its genial and amiable Editor, M. Camille Bernardin, who has collected information from different quarters on the subject. One amateur (M. Fostier), who resides in the Department of Seine-Inférieure, states that all his standards and half-standards, with a few exceptions, are gone, and that his hopes depend on those on their own roots or grafted just above the ground. Another writer from the Department of Aisne writes to the same effect, and states that the only Roses which have braved the winter are Persian Yellow and Aimée Vibert, from Holland. Then comes the statement of M. M. H. Kerstens, that everything has gone. Hybrid Perpetuals, Teas, and Noisettes—whether standard, dwarf, budded close to the ground, or on their own roots—all have alike perished. As the result of his inquiries M. Bernardin draws the conclusion that standards and half-standards are nearly all killed, while low-budded dwarf and Roses on their own roots have been saved, thanks to the thickness of snow which covered them. We must not take, then, he says, seriously that which those pessimists write or say who would have us believe that all Roses are entirely destroyed. It is a great mistake, which we were happy to correct by declaring that if the ravages have been great amongst the standard Roses there remain millions of Rose trees which will give us beautiful and lovely flowers in the ensuing summer. This is the real truth. M. Charles Joly, formerly Vice-President of the Central Society of Horticulture of France, was then wrong in writing a letter, which has been partly reproduced in the "Revue d'Horticulture Belge," in which he says, "Brie-Comte-Robert and Bourg la Reine have not a single Rose tree left. It is a serious error and a great inaccuracy, which we beg our *compères* of the horticultural press to correct, as being very prejudicial to Rose-growers in general." M. Bernardin also quotes from the "Bulletin de la Société d'Horticulture d'Eure-et-Loire," a statement by M. le Marquis de Cherville, in which he declares his opinion that one great cause of the destruction was the lateness of the season and the early date of the frost, and declares that had the severe frosts of December 7th to 14th occurred in January the trees would have passed through it without suffering; but the year had been exceptionally late, the descent of the sap had not terminated, and hence is explained the fact that the stems had suffered more than the upper parts. Nearly all trees planted only a fortnight before the great fall of the thermometer have been spared, simply because the transplantation had hastened the descent of the sap.

It will thus be seen how very severe have been the losses in France, and I fear many on our side of the Channel have much cause to grieve over the severity of the past winter.—D., Deal.

WILD FLOWERS IN EARLY SPRING.

WITH the first warm rays of a February sun the firstlings of the year awake from their long winter's sleep, and venture forth to welcome the return of spring. The day I chose for a botanical ramble was bright and summerlike (March 12th). Passing along the lanes I noticed young leaves bursting from the dried-up stalks of the Bramble. The Hawthorn was also producing its leaves. The Pileworts (*Ficaria*) were in full bloom, and the hedges were quite yellow with their flowers. The pretty but small white flowers of the Strawberry-leaved *Potentilla* (*P. fragariastrum*) and those of the Cardamine *sylvatica* are among our first spring flowers. The Danish Scurvy-Grass (*Cochlearia danica*), shows its cross-shaped white flowers very early on walls, &c., and *Veronica hederifolia* was also just showing its tiny flowers. That beautiful but obnoxious weed, the Coltsfoot (*Tussilago Farfara*), has been in bloom for a long time; it is very fragrant. I found some early-flowering specimens of its relative the Butterbur (*Petasites fragrans*). The flowers of this plant are yellow, and very much prettier than the other. In nearly every sheltered spot I found the beautiful *Oxalis acetosella*. The flowers of this plant are very handsome, drooping, white with scarlet veins. This is said to be the original Shamrock of St. Patrick, who plucked it to convert the Irish. Near a plantation I found the double variety of the wild Narciss (*N. Pseudo-Narcissus*), also

the beautiful little Snowdrop (*Galanthus nivalis*), which is one of the prettiest of our spring-flowering plants. Many other more common plants were also observed that do not require special notice here.—WILLIAM ROBERTS, Penzance.

MARÉCHAL NIEL ROSE SPORTING.

I SEND you some blooms from a Maréchal Niel Rose I have growing under glass. The stock is planted outside in a border at the back of a vinery which joins the house where the flowering wood is in. There are three plants, and a sport from one of them throws blooms like those forwarded to you. It has done so for two seasons. All three are treated alike, and planted in stiff clayey soil enriched with well-decomposed pig manure. The blooms come of the same colour, both shaded from and exposed to the sun. Those sent are small, but there are some quite as large as Maréchal Niel usually comes; the colour of the blooms is as near like that of a good Jean Ducher as any Rose I know. Can any of your correspondents inform me if they have ever known Maréchal Niel produce blooms of this character elsewhere or not?—A. P.

[The foliage is precisely the same as Maréchal Niel, but the opening flowers are more globular—less pointed—than those of the normal variety. The colour is rich cream, veined and suffused with pink. It is very beautiful and highly fragrant.—EDS.]

TABLE PLANTS.

ALTHOUGH many of the smaller and more elegant Palms must be accorded the place of honour as table plants, the fact that it is difficult to obtain a stock quickly to replace those which become too large tends in a certain degree to impair their usefulness. Therefore, as many more of our best table plants are not sufficiently easy of increase, I wish to treat of a few which present no difficulty in that respect. To have a good supply of table plants it is necessary to select those of suitable growth, tall, light, elegant, and compact, and to grow them with the above object specially in view, as an efficient supply is not always available from a general collection of plants.

It is well, even indispensable, where a continuous supply throughout the year is required, to provide annually as many plants of each species as may be thought requisite to replace any that become injured by gas, excessively dry air, or any variation of temperature to which they may be subjected from open dining-room windows or in transit to and from the mansion.

Flowering plants can seldom be employed more than twice so more duplicates are required of them than of those that are grown for their beauty of form or the colouring of foliage. The most suitable plants are those that can be propagated each spring, either by seeds, cuttings, division, or other means, and that will prove serviceable the same year, at the same time giving due consideration to general adaptability for the purpose intended, and to variety in height, form, and colour, taking care to have flowering, berry-bearing, handsome foliage, and plants of elegant habit. As larger pots than those 5 or 6 inches in diameter can rarely be used for table decoration, it is well to see that no more drainage material is employed than is absolutely necessary. If the draining is done with care it is easier to keep plants in a healthy condition that cannot be shifted into larger pots than when the drainage is excessive, frequent supplies of water being then required. Any artificial manures that are not offensive may be applied as the soil in which the plants are grown becomes exhausted.

Of table plants that may be raised from seed I may mention as amongst the most useful *Grevillea robusta*, *Acacia lophantha*, and *Solanum Prince of Wales*. It is advisable to propagate *S. Capsicastrum* from cuttings where procurable from a good strain, combining fine berries with good foliage, as plants of better habit and more fruitful character are thus obtained, seedlings being frequently too luxuriant. Begonias make neat free-flowering plants when annually raised from cuttings, as, for instance, such old species as *B. nitida*, *B. spatulata*, *B. odorata*, and many others with handsome flowers and good habit while young. The ornamental-foliage Begonias are chiefly useful for brackets in entrance halls or passages. The tops of *Dracenas* that have become too tall may be cut off and struck in heat, and will be serviceable almost immediately, while those struck from pieces of root or stem will be of suitable size by the autumn, when, if not overpotted, they remain

useful for a whole season; the old species *D. terminalis* and *D. Cooperii* are still as effective as any for this purpose. Cuttings of *Sanchezia nobilis variegata* grown on freely make pretty table plants, but require a light stake to keep them upright. Strong spring-struck cuttings of *Fuchsia Rose of Castle* I have found to make useful little plants in 48-size pots, the habit and floriferous character of this variety rendering it more suitable than most other *Fuchsias*, many of which make but poor table plants. One of the most serviceable plants readily obtainable by division is *Cyperus alternifolius*, which is very elegant, light, and Palm-like, if the plant is young, with all the stems starting from one point in the centre of the pot, whereas a great part of its elegance is lost when old plants are employed. This applies with equal truth to many other plants increased by division. If care is taken when dividing the plants of *Cyperus* to select only those portions that are throwing up weak crowns close together, more graceful plants will result than if stronger-growing parts are taken. This course of selection is not, however, applicable to the variegated form, which is seldom too strong in growth.

Richardia sthiopica and *Astilbe barbata* are two plants that can be divided to almost any extent after flowering, and can be grown on until the autumn out of doors, and become in the early spring the most useful of flowering plants. Of Ferns I have found *Adiantum cuneatum*, *A. assimile*, *Pteris tremula*, and *P. serrulata* suitable for extensive division and effective on the table. I do not like any of the cristate forms of *P. serrulata* so well as the normal one for this work, as, however beautiful they may be, they lack its graceful grass-like fronds. Where Strawberries are forced the introduction of a pair of plants, if well fruited and with healthy foliage, imparts a pleasing variety which is sure to be appreciated; but it must be remembered that repetition will spoil the effect of novelty, which is their principal recommendation. *Caladiums* are very suitable; the little *C. argyrites*, being so compact, is a very elegant table plant of low growth and very distinct. *Gloxinias* are also useful, their handsome foliage having a fine effect in strong artificial light when thoroughly healthy and free from dust, and the manner in which the leaves clasp any vase used is quite unique.

Achimenes require to be started in pots—say three, or at most six—in a 48 or 32-size pot. If they are started in good time and pinched two or three times according to the time they may be required to bloom, specimens of a very different appearance will be formed from those composed of numbers of individuals insufficiently clothed with foliage. Many more equally good plants might be mentioned, but I have selected those enumerated as being of easy increase and growth, and, moreover, so common as to be in almost every collection.

One of the principal points to be observed in growing plants for table decoration is to subject them to as moderate a temperature and as little humidity as is consistent with healthy growth, for excessive heat or moisture renders them quite unsuited to the purpose.—**RAOUL**, *St. F.*

NOTES AND GLEANINGS.

At the spring Show of the ROYAL BOTANIC SOCIETY on the 24th ult. certificates were awarded for the following plants:—To Messrs. Veitch & Sons, Chelsea, for *Hyacinths Cavaignac*, Queen of Yellows, Distinction, and Captain Boyton, all of which are described on page 238. For five *Amaryllises*; Princess Augusta Victoria, a very handsome variety, flowers symmetrical, 6 or 7 inches in diameter, nearly white ground colour, slightly streaked with crimson, scape bearing three flowers; Duchess of Connaught, flowers of medium size, nearly white, with a greenish tinge in the centre, three to four flowers on a scape; Thalia, large flower, 7 or 8 inches in diameter, petals very broad, of a deep crimson hue; Iris, flower of medium size, neatly formed, of a rich crimson colour; and Emilia, flowers of good form, four in a scape, fine crimson shade, tipped with greenish yellow. For the double purple *Cineraria* Mr. Thos. Lloyd, described on page 235; and for *Spiraea japonica foliis aureis*, which differs from the ordinary form in the slightly golden variegation of the foliage, and the larger plume-like panicles of flowers. To Mr. R. S. Williams, of Upper Holloway, for *Amaryllis Exquisite*, flowers large, of excellent form, colour an intense scarlet, with a central white streak down each petal; *Coccyne ocellata maxima*, an excellent form of this species, sepals and petals white, labellum white with a pale yellow blotch in the centre, flowers borne in a drooping spike. To Mr. H. B. Smith, Basing Dean, for *Cyclamens Rosy Morn*,

which was certificated at South Kensington in 1878, a handsome variety, with large rosy purple flowers; Duke of Connaught and *Persicum picturatum*, which are described in the "Gardeners' Year Book" for 1880. To Mr. Bell, Chelsea, for *Selaginella Kraussiana aurea*, the golden form of this well-known plant; and *Polystichum viviparum*, a distinct and elegant Fern, with long narrow dark green pinnate fronds. To Mr. Wiggins, gardener to H. Little Esq., Hillingdon Place, Uxbridge, for *Amaryllis International*, flowers very neat and pretty, veined with crimson maroon, the colour being deeper near the apex of the divisions; and for *Primula Meteor*, described on page 196. To Captain Patton, Langford Place, St. John's Wood, for *Hyacinth Lady Headley*, bells small but well formed, pale pink, borne in a compact spike of medium size—a distinct and pleasing colour.

—OUR correspondent "C." observes—"There has been recently published a statement, which is curious in showing that though many LONDON MARKET GARDENS have disappeared, they have left their consequences. The unhealthiness of various streets, &c., in the suburbs is ascribed to the fact that the houses are built upon garden ground to which, in order to get quick succession of crops, the gardeners used to apply enormous quantities of manure. Hence foundations laid upon this substratum are not much better than if they were built over cesspools."

—ONE of the most attractive Ferns of recent introduction is *MICROLEPIA HIRTA CRISTATA*, a native of the South Sea Islands, whence Mr. B. S. Williams of Upper Holloway obtained it a few years since. It is strikingly distinct and elegant, with graceful bipinnate drooping fronds that terminate in a cristate apex. It succeeds admirably, either in a basket, for which the pendulous habit especially adapts it, or in pots, a rather warm temperature being requisite to obtain the plant in the best condition. There is now a fine stock of this beautiful Fern in the Victoria and Paradise Nurseries, where its good qualities can be seen to the best advantage. The finest specimen, however, that has come under our notice is at Garbrand Hall, Ewell. It is in a 10-inch pot, and will form an effective front row plant for exhibition purposes. It is distinct from all other Ferns by its soft yet pleasing pale green fronds.

—We have observed in the Royal Horticultural Society's garden at Chiswick and the orchards contiguous that there is a great SCARCITY OF FRUIT BLOSSOMS on many trees. Apricots have no blossom, Peaches scarcely any, and only very few Pear trees are promising at all well. Two fine pyramids, however, of that excellent Pear *Maréchal de Cour* that were fruitless last year are heavily laden with blossom buds; and the useful variety, *Belle Julie*, that bore a heavy crop last year, promises well; but these are exceptions, the majority of the Pear trees being comparatively flowerless. Apples and Plums are much more promising, the trees being if not heavily yet very well furnished with fruit buds.

—IN the same garden the large *CAMELLIA BUNDES* growing in a border exposed to the north have not been so severely injured by the winter than have Laurels. The flower buds are destroyed and the foliage is browned, and some of the leaves will probably fall, but the *Camellias* will recover on the return of genial weather, and will soon be in as good condition as before. Their condition now proves beyond doubt that they are much more hardy than *Bays*, *Eunonymuses*, and *Laurustinuses*, and suggests that *Camellias* may be planted with a good prospect of success in many pleasure grounds in the south of England where they are not now to be seen.

—THE BRENCHELEY AND HORSMONDEN HORTICULTURAL SOCIETY will hold their annual Show on August 3rd, 1890, at Broad Oak, Brenchley, when there will be over five hundred prizes to be competed for. Mr. James Guest, Brenchley, is the Honorary Secretary.

—We learn that Messrs. CARTER & Co. of High Holborn have been instructed to supply the Duchess of Marlborough's Irish Famine Relief Fund with the enormous amount of 1000 tons of seed Potatoes, the variety selected being the Scotch Champion.

—THE GENERAL HORTICULTURAL COMPANY (LIMITED), which we referred to on a previous occasion as projected, is now formed and in operation. The Company having acquired the stock and business of Mr. John Wills, F.R.H.S., purposes to extend the same upon co-operative principles, the chief object being as stated in the prospectus, "the development of horticulture in all its branches." In addition to Mr. Wills' exten-

live nurseries, Warwick House, Regent Street, has been secured as a central depôt. The Company commences with extensive and powerful patronage, Mr. Wills being appointed General Manager.

— WE have the pleasure to announce that HIS ROYAL HIGHNESS THE DUKE OF CONNAUGHT, K.G., has graciously consented to preside at the festival of the Gardeners' Royal Benevolent Institution, to be held in the ensuing summer in aid of its funds. The day is not yet quite determined upon, but it will probably be on or about the 7th July.

— MR. WILLIAM PAUL has published in pamphlet form his paper entitled the FUTURE OF EPPING FOREST which he read before the Society of Arts on January 28th, and an abridgement of which appeared in our columns. The paper in its complete form is both entertaining and instructive, as it is written in an agreeable style and contains useful suggestions to those engaged in planting for ornamental purposes.

— THE HON. AND REV. J. T. BOSCAWEN informs us that he intends offering two ten-guinea cups as PRIZES FOR ORCHIDS to be competed for at the summer Show of the Bath and West of England Society at Worcester in June. Every care will be taken to provide suitable accommodation even for the choicest plants, and a very handsome display may be expected.

— AT Mr. T. S. Ware's Nursery, Tottenham, HARDY PLANTS, although greatly retarded by the severe weather early in the season, are now making great progress. Many attractive plants are flowering, notably the Hepaticas, of which there are several large beds, including a number of pretty seedling forms exhibiting a great diversity in colour. *Sisyrinchium grandiflorum* and its white variety, *Draba aizoides*, and *Primula denticulata* render the grounds very bright. *Erythronium*, *Anemone Pulsatilla*, and *Puschkinia libanotica* are also flowering freely. On the rockery the white *Caltha leptosepala*, and the pale pink-flowered *Epigaea repens* are noticeable.

— IN the temperate house at Kew that very beautiful Himalayan species, *RHODODENDRON CILIATUM*, is now flowering freely. This is a species of dwarf and compact habit, with hairy elliptical dark green leaves, and bears terminal clusters of five or six open bell-shaped flowers, that are white within and faintly tinged with purple externally. This handsome little shrub deserves to be much more extensively cultivated. Another species of some attraction is *R. virgatum*, which also has white flowers but much smaller than *R. ciliatum*. They are both well adapted for pot culture.

— ON Easter Monday the public were admitted to the ROYAL HORTICULTURAL SOCIETY'S GARDENS at Kensington, at the nominal charge of 2d. each person; 10,089 visitors attended, the sum of £84 1s. 6d. being thus realised.

— IN consequence of the exceptionally severe WINTER IN PARIS it is computed that no fewer than 54,000 evergreens, 20,000 Firs, and 30,000 deciduous trees are required for the Bois du Boulogne alone to fill up gaps made by the destructive frost. M. Tirard, the French Minister of Agriculture, has directed the prefects to report what kinds of fruit trees, Vines, cereals, &c., suffered most and least from the severity of the winter. The loss in money to the Municipality of Paris will be barely covered by a million francs.

— REFERRING TO VERBENAS FROM SEED, an American writer observes:—"It does not seem generally known that plants raised from seed will produce larger flowers and more of them than plants grown from cuttings; nevertheless, such is the case, and another thing to recommend these seedlings to favour is that the light-coloured ones are nearly always fragrant. Seedlings are not, however, to be relied upon to produce certain colours. They do not generally come true." The seed may be sown during February, March, and April in boxes of sandy soil over a hotbed, careful attention being paid to the supply of water. When the young plants appear they may be transplanted into other boxes of light rich soil, where they can remain until large enough to plant out.

— THE importance of affording slight PROTECTION TO CHOICE HALF-HARDY PLANTS is well exemplified at the Hale Farm Nurseries, Tottenham, where the following plants have survived the severity of the last winter with no other protection than a piece of glass placed over the nooks in which they were planted—*Todea hymenophylloides*, *Dioscorea muscipula*, *Darlingtonia californica*, and *Sarracenia flava*; indeed the latter in one portion of the rockery has been quite unprotected, and yet is but slightly injured.

— POLYANTHUSES.—I am not aware of any published catalogue containing the following varieties:—Bang Europe, Beauty of Over, Commander-in-Chief, Countess, Jolly Dragoon, King, Lord Crew, Lord John Russell, Lord Nelson, Mary Ann, Othello, Prince of Orange, Princess Royal, Rev. F. D. Horner, Tantarrara. Perhaps some of your readers can assist me in obtaining these varieties.—B. D.

ROSE SHOW FIXTURES.

As dates of Rose shows are being determined upon now it may be useful to record the fixtures for the exhibitions of 1880, which, as far as I at present know, are as follows:—

June 26th	.. ..	Reigate.
June 29th	.. ..	Royal Horticultural Society, South Kensington.
June 30th	.. ..	Farnhamham.
July 1st	.. ..	Canterbury.
July 1st	.. ..	Shrewsbury.
July 3rd	.. ..	National Rose Society, Crystal Palace.
July 6th	.. ..	Oxford.
July 7th	.. ..	West of England, Hereford.
July 17th	.. ..	National Rose Society, Manchester.
July 20th	.. ..	Leek.

I may take this opportunity of stating that I have received a letter from the Rev. J. M. Fuller, enclosing one from Mons. Reanarts, the President of the Rose Society of Antwerp, offering three silver medals at the National Rose Society's Exhibition at the Crystal Palace for the best Hybrid Perpetual, best Tea, and best Noisette in the Show.—D., Deal.

SMALL BIRDS.

THE horticulturist and naturalist join issue in regard to the bullfinch, the former being almost unanimous in describing it as the enemy of the gardener, and I must state they have the support of some of our naturalists. Gardeners assert that it attacks the fruit buds, the naturalist that it only touches those buds in which the larvæ of one of our commonest moths are to be found.

In support of the latter statement I will give two short extracts written by the same eminent naturalist from whose paper I previously quoted, and will refer again to the "Zoologist" of 1863, page 8699, where Mr. Newman writes thus—"The larvæ make their appearance early in the spring, and commence their destructive career by eating into the young unexpanded buds. . . . At this time of the year the bullfinches and titmice render most important service to the gardener by devouring this little garden pest." And again in "Zoologist," 9361 (1864) in a footnote to Capt. Henry Hatfield's paper on the moulting of the bullfinch, and remarks on its food.

The same writer adds—"In reference to the food of the bullfinch, I have shown that the young larvæ of *Hyberica brumata*, which feeds on the buds of Plums and Gooseberries, is the favourite food of this beautiful bird in spring, and therefore that the bird is a great benefactor to the gardener."—W. R. R.

IRISES.—No. 6.

THE two remaining sections of Xiphions which bear the names of old genera—viz., Gynandris and Juno, do not comprise many species of cultural value, although several possess some historical interest. The first division, Gynandris, is distinguished from the others by the erect position of the standards, and the filaments of the stamens being united at their base. It includes only one species, *X. Sisyrinchium*, which is rarely seen in gardens, although it has been in this country about three hundred years. The cause of this neglect is no doubt to be found in the small size and extreme fugaciousness of the flowers, which, moreover, will scarcely bear comparison in point of beauty and attractiveness with the majority of other Xiphions. It is chiefly interesting as being one of the bulbous Irises which were known to the old writers, by some of whom it was described under the generic name *Sisyrinchium*. Towards the close of the sixteenth century it was figured both by Dodonæus and Lobel, and it was mentioned by Gerarde as one of those cultivated in his garden. The latter writer called it Spanish Nut, and quaintly remarked that "it is eaten at the tables of rich and delicious persons in sallads or otherwise." The plant is distributed somewhat widely, being found from Spain and Portugal, through the Mediterranean region to Palestine, and beyond to Afghanistan. The flowers are rather pretty but by no means striking, the standards being pale lilac

blue, and the falls tinged with a similar colour with a yellow spot on each. While it has so many handsome rivals it cannot be expected to receive much attention in gardens generally except as a curiosity.

The last section, Juno, is marked by small horizontally spreading standards, and by the filaments not being united. It includes seven species, two of which, *X. alatum* and *X. persicum*, are well known, while the others are either rare or not



Fig. 35.—XIPHION (IRIS) ALATUM.

yet in cultivation. The one first mentioned, *X. alatum*, is represented in the annexed engraving: it is a native of Spain and Portugal, being also found in Algiers. It was known to some of the old authors, and was described by Clusius; but it first appeared in this country about the year 1800. The

flowers are of a bright lilac purple colour, and are produced during the winter months from November to February. The plant is hardy in the south of England, and succeeds well in a warm border of light soil, or on a rockery. It may also be grown in pots and even in glasses similarly to *Hyacintha*.

Another pretty and well known Xiphion is *X. persicum*, which produces its pale lilac blue-tinted fragrant flowers in March and April, and is an admirable plant for pot culture. It formed the subject of the first plate that appeared in the "Botanical Magazine." Several other species of more or less beauty are known, but with the exception of *X. caucasicum*, a form somewhat resembling *X. persicum* but destitute of its scent, they are not in cultivation.—L. CASTLE.

AUTUMN PEARS—BONNE D'EZÉE.

EIGHT years ago last autumn some very fine specimens of this Pear, grown no doubt under favourable circumstances, and

produced in the best condition, were exhibited at one of the meetings of the Royal Horticultural Society under the name of Brockworth Park, and were awarded a first-class certificate. We direct attention to this Pear thus prominently for the purpose of impressing upon our readers its true name. We were not present at the meeting referred to, but have since had frequent and ample opportunities of examining specimens grown under varying conditions, and we have no hesitation in stating that the Pears exhibited were unusually fine examples of Bonne d'Ezée, to which the name of Brockworth Park was given in perfect honesty and undoubted good faith as to a new variety. As we stated in the "Fruit Manual," the tree from which the certificated fruits were gathered was found growing

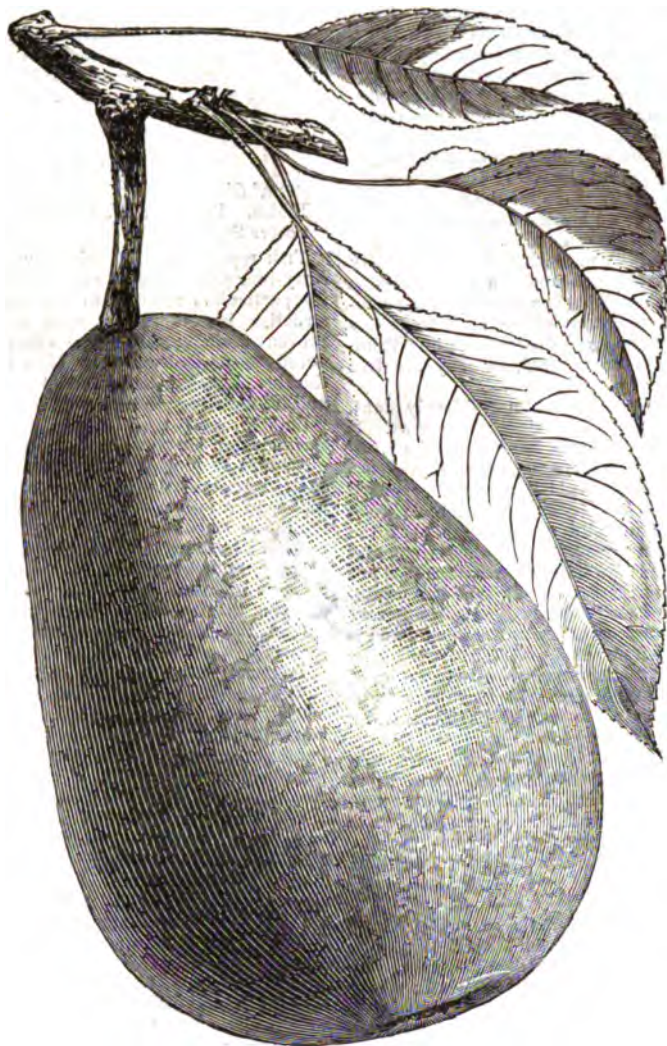


Fig. 36.—BONNE D'EZÉE.

against a wall at Brockworth Park near Gloucester, and was supposed to be a seedling, but no authentic information could be obtained as to its origin. As all practical cultivators know, Pears vary so greatly according to the soil and conditions under which they are grown, that a mistake of the nature of the one in question may easily be made, and in this case it was the more excusable, as the variety Bonne d'Ezée was not then widely cultivated, and consequently few persons could recognise the fruit of it when exhibited under another name. In consequence, however, of the honour that was attached to the variety a demand naturally arose for the supposed "new" Pear, and many trees have been planted in various districts. Several of these have arrived at a fruiting state, and the quality of the fruit has been tested. Under ordinary culture Bonne d'Ezée is not a high-class Pear, but under certain circum-

stances very good fruit have possibly been produced. In due time when the merits of autumn Pears are being discussed this variety will doubtless receive a share of attention; but whether the result is favourable or not it is important that the true name of the Pear be understood. The following is the description and synonyms of the Pear under notice:—

BONNE D'EZÉE (*Belle de Zies*; *Bonne de Zies*; *Bonne de Haise*, Brockworth Park).—Fruit large, 2½ inches wide and 3½ inches long; pyramidal. Skin straw-coloured, with a tinge of green, and thickly marked with traces of brown russet interspersed with a few green dots. Eye open, with long linear segments. Stalk stout and fleshy, an inch long, and obliquely inserted. Flesh white, coarse-grained, and inclining to gritty, half-melting and juicy, with an agreeable perfume. Ripe in October. It was discovered as a wildling at Ezée, near

Loches, in the Touraine, in 1788, and was first brought into notice by M. Dupuy, a nurseryman at Loches.

CHOICE HARDY PLANTS IN FLOWER—MARCH.

Sisyrinchium grandiflorum.—A lovely little plant belonging to the Iris family, with a perennial rootstock, from which annually spring up tufts of grass-like foliage and slender flower stems bearing one or more flowers, more or less pendulous, about 1 inch across, bell-shaped, of a rich purple colour, and lasting a long time in beauty. There is also a white-flowered variety named *album* which is much rarer than the typical form; it is, however, a charming companion for that. They are natives of North America, and require only to be planted in a bed or border of loamy soil well drained but not dry. Where such plants are grown in pots this will make a good addition, as they thrive in pots and are remarkably showy.

Primula Nelsonii.—All the Primulas are exceedingly pretty; there is something so charmingly modest in their appearance, while their associations are not less interesting. This species is particularly handsome. It is similar to *P. nivalis*; the flowers are produced in large umbels, each about three-quarters of an inch across, of a delicate sulphur colour. It is very showy, and should be planted in a shady place on the rockery—not a perpetually shady place, but under the budge of a stone, where it will be protected from the sun's rays.

Primula acutis var. *Purity*.—A pure white-flowered variety of the old *P. acutis*, very free and showy, a most valuable spring-flowering plant. Crimson King is also a charming companion; the flowers are rich crimson with a distinct yellow eye, very showy. Where two good and distinct bedding Primulas are desired these should be secured, as they are free growers and very handsome.

Primula denticulata.—This is also a most useful hardy plant, producing fine trusses of flowers at this time of the year. It is a strong grower, well suited for beds, borders, or the rock-work, or even for growing in pots for the decoration of the conservatory. The deep or light purple flowers are produced in dense umbels on stout stalks, more or less covered with a silvery farina, which adds materially to the beauty of the flowers. The Primulas known as *purpurea*, *pulcherrima*, and *erosa* are only forms of this, and in a batch of seedlings it is not difficult to pick out many distinct forms. It is a most valuable plant, being perfectly hardy, easily grown, and very showy. The variety *erosa* is not so hardy as the others, and it should be wintered in a cold frame and protected from spring frost. We have seen this grown in pots for the decoration of the conservatory with great advantage. Too much cannot be said in eulogy of this plant so as to extend its much wider cultivation.

Anemone Pulsatilla.—A beautiful dwarf species, commonly known as the Pasqueflower; the leaves are finely divided and covered with long silvery hairs, which gives the plant a pleasing appearance. The flowers are large, of a pleasing shade of purple, with conspicuous yellow anthers; very free-flowering and showy. It should be planted in a well-drained position, warm and sunny, where it will succeed well. It is also a lovely species for growing in pots.

Scilla sibirica.—This ever-welcome little bulbous plant is very showy and charming; it is too well known to require any description. It is worth planting much more extensively than is the case at present. In masses on the rockery near other plants it greatly enlivens that section of the garden at this season of the year. We need scarcely speak of its value for spring bedding; we have it out just now alternated with Snowdrops, and the effect is pleasing.

Draba aizoides.—A very showy little species of very dwarf and dense growth, forming lovely cushions with deep green foliage, thickly studded with the racemes of bright yellow flowers. For the rockery this is almost indispensable. Good patches should be planted in exposed positions, but it must not be allowed to become too dry in the summer. It is easily propagated, and it is surprising that it is not much more extensively used in spring bedding. Some years ago it was more employed for that purpose, and we know of no reason why it has been neglected of late. *D. ciliaris* is stronger growing, but not so floriferous, nevertheless it is a good plant.

Hepaticas.—These are most valuable plants for early flowering, possessing such distinct shades of colour. In a batch of plants there is a delightful variation in the colour, some of the shades being extremely pleasing. They are most valuable for border decoration, being perfectly hardy, and in most situations

they readily establish themselves. They do not like too dry a position; the neighbourhood of trees or shrubs seems to suit them well. We remember a border where Hepaticas were a prominent feature, being quite surrounded with shrubs and trees, and the Hepaticas were simply charming every spring; they were planted in lines, the colours red and blue alternating. They are readily increased by division of the roots, which is the best way to augment the stock. We recently saw the following varieties in flower:—*H. triloba alba*, pure white; *H. triloba cœrulea*, various shades of blue (there is also a duplex form of this which is very showy); *H. triloba rubra*, flowers bright reddish pink; also the duplex red form with very double flowers of great beauty. A bed of these kinds in mixture are extremely effective, and add a considerable amount of charm to the garden just now.

Xiphion (Iris) reticulatum, which has been recently figured and described in the *Journal*, is also flowering, and a more charming plant can scarcely be obtained. It is of great beauty, perfectly hardy, and succeeds well either in a border or on the rockery.—T.

REVIEWS OF BOOKS.

Notes of Observations of Injurious Insects. By E. A. OMEROD, F.M.S. London: W. Swan, Sonnenschein & Allen, Paternoster Square.

THE report for 1879 which we have received includes in forty-four pages a large amount of useful and highly interesting particulars relating to the comparative prevalence of destructive insects in the year, and the methods adopted to prevent their increase. The value of the services being rendered to agriculturists by Miss Omerod and her coadjutors the Rev. J. A. Preston and E. A. Fitch, Esq., in thus comparing and elucidating the observations recorded cannot be over-estimated, and their efforts deserve every encouragement. Farmers, gardeners, and other observers are invited to forward any notes they may make concerning the insects that affect their crops, and the authoress remarks that "If the observer will send a specimen in case he does not know what it is, this is all the scientific entomology with which he need trouble himself; he knows the practical part of how it feeds on his crops only too well, and it is the detail of this injury, the amount of loss sustained, or how it has been prevented or stopped, that we are anxious to have information of, and to spread the knowledge generally." The following are the insects it is especially recommended to notice:—

INSECTS INJURIOUS TO FIELD AND GARDEN CROPS.—*Plusia Gamma*, Silver Y Moth; *Otiorynchus sulcatus*, Black Weevil; *Sitones lineatus*, Pea Weevil; *Agriotes lineatus*, Wireworm Beetle; *Tipula cloracea*, Crane Fly; *Tipula maculosa*, Spotted Crane Fly; *Anthonomyia ceparum*, Onion Fly; *Tephritis Opopordinis*, Celery Fly; *Paila Rosæ*, Carrot Fly; *Aphis rumicis*, Bean Aphis, *Collier*. To Cabbage and Turnips.—*Pieris Brassicæ*, Cabbage Butterfly; *Manestra Brassicæ*, Cabbage Moth; *Agrotis segetum*, Turnip Moth; *Phyllotreta undulata*, Turnip Fly; *Athalia spinarum*, Turnip Sawfly; *Aphis Rapæ*, Turnip Aphis. To Corn.—*Cephus pygmaeus*, Corn Sawfly; *Cecidomyia Tritici*, Wheat Midge; *Chloropus tanipus*, Corn Fly; *Aphis granaria*, Wheat Aphis.

INSECTS INJURIOUS TO TIMBER TREES AND FRUIT.—*Cossus ligniperda*, Goat Moth; *Zeuzera Esculi*, Leopard Moth; *Bombyx neustria*, Lackey Moth; *Yponomeuta padellus*, Small Ermine Moth; *Abraaxa grossulariata*, Magpie Moth; *Anthonomus pomorum*, Apple Weevil; *Eriocampa adumbrata*, Pear-tree Slug; *Nematus Ribesii*, Gooseberry Sawfly. To Pine Trees.—*Sirex gigas*, Giant Sirex; *Retinia turionana*, Pine-bud Tortrix; *Hylobius abietis*, Fir Weevil; *Hylurgus pini-perda*, Pine Beetle.

Communications may be sent to Rev. T. A. Preston, Marlborough; E. A. Fitch, Esq., Maldon, Essex; or to Miss Omerod, Dunster Lodge, near Isleworth; who will give any wished-for information in their power relative to this important subject.

Strawberries all the Year Round. By WILLIAM HINDS, Gardener to Sir Ivor B. Guest, Bart., Canford Manor, Wimborne, Dorset. Published by the Author.

THIS is a small pamphlet of sixty pages, and the author claims justification for the title because he in 1877 gathered the last Strawberries from autumn-bearing plants on January 3rd, and the first dish of spring-forced fruit on February 16th. Mr. Hinds has given great attention to Strawberry culture, and what he writes is the result of his own practice. He has

however, we think, written most fully on that phase of his subject, ordinary forcing, that is best known, while he dismisses the practice that is much less commonly adopted of fruiting Strawberries in winter in a very short chapter. Similarly short, too, are the notes on Strawberry culture in the open air. Mr. Hinds is an experienced writer, yet his instructions on one point lack perspicuity, for he does not show with sufficient clearness how a continuous supply of Strawberries can be maintained after the regular outdoor crops are over, say during August and September. That fruit can be gathered during these months we well know, and for this purpose the Alpines are very useful, but these are, somewhat strangely, not mentioned. That Strawberries which have been forced early and well tended and cultivated will fruit freely in October and November has long been known and practised. More than a quarter of a century ago we gathered heavy crops of a good old variety not much grown now, Alice Maud, in the autumn, and subsequently Vicomtesse Héricart de Thury; and we know of gardens where autumn Strawberries have long been regularly produced. Still the practice is not nearly so general as it might be, and as ordinary forcing is. Mr. Hinds' pamphlet contains much sound information, but some points of practice that all good gardeners will not think the best for adoption. The selection of varieties recommended is good, but "Unser Fritty" should have been printed Unser Frits.

MIXED FLOWER BORDERS IN 1879.—No. 3.

TROLLIUS, POLEMONIUM, VERONICA, ORCHIS, LIATRIS.

THE flowers of the genus Trollius (Globe Flower) will endure much rain without injury, and the season of 1879 not only suited them and lengthened their flowering season in spring, but made them flower plentifully again in early autumn. We find at least ten varieties in catalogues, but there is no great difference of form or colour. An Edinburgh catalogue contains one "albus," and I shall believe in a white Trollius when I see it, but they range from straw colour to orange. There is the native *T. europæus* with abundance of light yellow flowers; *T. americanus*, or *giganteus*, with flowers of the same colour, but larger and fewer; *T. asiaticus*, with darker and more open flowers, very much like the darker Marsh Marigolds; *T. napellifolius* has large dark orange flowers, individually handsomer than any other, but sparingly produced. *T. japonicus flore-pleno* is the nearest approach to a double flower, but I have never seen a truly double Trollius. The Trollius prefers a moist retentive soil, but does so well in nearly any soil that there is little to tell about its treatment. If you wish to raise a stock it will bear almost endless division, and the plants for two or three years increase fast; but its abundant and closely matted roots, almost like a mass of fibrous peat, will soon exhaust the soil if not enriched or replenished, and the plants will generally deteriorate if not divided or transplanted once in three or four years. The best time to divide them, and nearly all herbaceous perennials, is a little before the leaves begin to fade in autumn, they then have activity enough to establish their roots before winter and are ready to start in spring. As a rule the worst time to divide plants, especially those with fleshy roots or crowns which require cutting, is when they are quite dormant in winter. The cut part is then longest in healing, and remains exposed to the evil influences of frost, wet, and underground vermin, and can do nothing to help itself. If you cannot divide your plants in autumn it is better to wait till they are starting in spring, but many plants are so hardy that they will survive any amount of ill usage, and perhaps the Trollius is one of these.

Of the Polemonium (Jacob's Ladder), the one with variegated leaves was unusually fine this summer. I do not allow it to flower that it may make more leaves; and it is gay in the mixed border, giving no trouble. A side shoot pinched off with a bit of root in early spring makes with very little nursing a fine plant by the end of summer. The old-fashioned sorts, one with blue and the other with white flowers, should have a place in the border, and the seedlings which come up round them will thrive in many uncultivated spots. Hardy Veronicas are many and perplexing, and may be divided into three classes—shrubs, dwarf rockery plants, and herbaceous border plants. Many of the shrubs, as *V. Traversii*, *V. parviflora*, *V. pinquifolia*, do well and are desirable either on the rockery or in the mixed border. Of the rock varieties *V. rupestris* is perhaps the best; anyone who has seen it on the rockery at Hale Farm Nursery in June would think he

could not have too much of it. But the most useful species for the mixed border is the old species generally known as *V. spicata*, which appears under many colours and forms, and I think also under many names. It grows wild in North Wales, creeping in a dwarf form amongst limestone rocks; but in gardens it becomes nearly 3 feet high, bearing white, or rose-coloured, or lavender, or blue flowers. By far the best variety I have is one with variegated leaves and flowers of a brilliant cobalt blue, the spikes being often 18 inches long. Last year it flowered from August to October, being unusually fine. *V. spicata* requires more than frequent division; it requires separating into single stalks once in two or three years, or the heads get crowded and the flower spikes stunted. Plant three stalks 2 or 3 inches apart early in autumn, and they will flower well the first year and be at their best the second. Another old-fashioned species is *V. gentianoides*, which flowers a month earlier than *V. spicata*; of this, too, there is a variety with variegated leaves. It may be desirable in dry light soils, but it grows too coarse and straggling, and spreads too fast with me to be a first-rate border plant. All the herbaceous Veronicas should be tried and the best selected, as they differ greatly according to the soil.

The native terrestrial Orchises are not seen in the mixed border as often as they deserve. In good loamy borders the early purple Orchis (*O. mascula*), and the Marsh Orchis (*O. latifolia*) often do well, but the spotted Orchis (*O. maculata*) seldom fails, and I never saw it finer than last year. It is, perhaps, too common a wild flower to please fastidious gardeners, being found in every part of the kingdom. It formed quite a conspicuous feature last July flowering in extensive masses near some parts of the road between Capel Curig and Ogwen Lake in North Wales, and I have seen it on the highland moors in full flower during the grouse-shooting season, but in English gardens it flowers early in June when garden flowers are scarce. Dig it up when in flower with a ball including all the roots, cleansing the surface weeds away carefully, and having planted two or three in a clump leave them quite undisturbed. A garden variety called *O. maculata superba* of gigantic size is well worth cultivating if you can get it. If these do well you may venture to try *O. foliosa*, a fine species from the mountains of Madeira, hardy in England, but expensive because it increases slowly. Most of our other native Orchises are difficult to cultivate in ordinary flower borders. I mention a pretty and interesting genus, *Liatris*, here, because it flowers when the Orchis is over, and at first sight may easily be mistaken for a purple Orchis; but the flower spike has the peculiarity of coming into flower from the top downwards. I have three or four species all much alike, *L. spicata* being the most common. It is neat in growth, endures wet and cold well, and increases fast enough if divided with a knife as soon as out of flower. It seems to like a strong retentive soil, not doing so well in light gravelly soils.—C. W. DOD.

HUTTON HALL,

THE SEAT OF G. W. FRASE, Esq., M.P.

HUTTON HALL is situated about nine miles from Middlesbrough at the foot of the Cleveland Hills. It is only about nine years since the present mansion was erected. A more beautiful spot it would have been difficult to have chosen, sequestered as it is at the foot of the Hills, which rise to a considerable height, and are now beginning to be covered with very fine plantations. Nothing was omitted which was considered necessary for the embellishment of this almost princely residence.

The gardens are under the care of Mr. McIndoe, who is well known as a successful cultivator and skilled Grape-grower. A glass corridor containing Peach and Fig trees on the back wall, with several useful climbers overhead, such as *Bougainvillea glabra*, also the charming *Mackaya bella*, with its glaucous green foliage and long racemes of flowers, was first entered. From this corridor branch all the houses. Taking them in rotation, the first is a span-roofed forcing house, 60 feet long by 12 feet wide, divided into a Cucumber and a Melon house. Only one variety of Cucumber is grown there—Verdant Green, which was raised by Mr. McIndoe. It is a well-formed fruit, short in the neck, bears profusely, and is in use all the year round. The other compartment contained Melons, the favourite being a white-fleshed variety named Marcellus. The latest vinery is a span-roofed house, 60 feet long by 34 feet wide. In this house were fine bunches of Gros Guillaume

from 12 to 14 lbs. in weight. Gros Colman was also growing here, it being twisted round the pillars in the centre of the house. Lady Downe's was remarkable for its well-developed bunches and berries. West's St. Peter's was strongly represented. This Grape Mr. McIndoe considers next to Black Hamburgh, and finds it useful for December, Gros Guillaume then following. Gros Colman is his February Grape, the skin being then quite thin, the fruit Hamburgh-like in quality and much improved by keeping. After that follows Morocco, finishing with the indispensable Lady Downe's. Adjoining was the second early house, which contained mostly Muscat of Alexandria and its allies. Many of these had been cut, but still some excellent bunches remained, Canon Hall being good. We had the pleasure of tasting the Champion Muscat, which certainly partakes both of the Muscat and Black Hamburgh flavour. There is a fine Peach house, 46 feet long by 22 feet wide, in which the trees, although only planted four years ago, carried last year above one thousand Peaches. Preference is given to late varieties, such as Princess of Wales and Walburton Admirable. Mr. McIndoe advocates and practises giving Peach trees plenty of water at the roots. After the trees have ceased bearing regular supplies of water are given to the borders until the leaves fall, and better finished wood and plumper buds are seldom seen.

Another span-roofed vinery contained fine bunches of Black Hamburgh 6 and 7 lbs. weight. The Frankenthal and Duke of Buccleuch were grown in this house. We were rather anxious to see Mr. McIndoe's treatment of the latter much-disparaged Grape, for we have several times seen him place excellent examples of it on the exhibition table. Mr. McIndoe attributes his success with this variety to allowing the Vines plenty of room and light, and to not restricting their growth. The variety is also grafted on the Black Hamburgh stock 3 or 4 feet above the ground; this assists in giving that fine tint of rose colour so essential to the perfect finish of the Grapes. The Vines are planted inside in all the houses, but the roots are allowed to penetrate to the outside borders. Mr. McIndoe is also an advocate for supplying plenty of water to Vines; they receive a great quantity up to finishing, and after commencing to colour they are as copiously supplied as ever. A large supply of piping is provided, which is evenly distributed all over the houses. About ten rows are generally used; but in the Muscat house there are sixteen rows or nearly 1000 feet; he can by this means in the very depth of winter obtain, should the Muscats require it, an equal temperature of 75°.

The stove is a neatly gravelled span-roofed house 60 feet long by 34 feet wide, with sides and a centre bed. There were some magnificent specimens of *Eucharis amazonica*, 5 and 6 feet across, containing some hundreds of expanded blooms. It is some time since we have seen the old favourite Orchid *Sobralia macrantha* in better condition; two plants of it measured over 7 feet high and 6 feet across. There was also a fine plant of *Maranta Veitchii* 5 feet high, and a *Geonoma pumila* was over 6 feet high.

We next passed into a square yard or frame ground. The Pines at present are grown here in pits and plunged in beds 5 feet deep, with four rows of piping in each bed and two rows all round. The plants were sturdy, fine, and healthy. The varieties are not numerous. Queen's, Smooth-leaved Cayenne, and Baroness Rothschild are grown. One fine fruit of Smooth-leaved Cayenne was nine pips deep and promised well. Here, too, were glass covers for protecting *Azaleas* and *Camellias* during summer. This yard is of particular service. In it are placed deep sunk pits into which all the garden rubbish is wheeled. This during the winter being turned over, and quicklime added, becomes a most valuable manure for most kitchen garden crops, and especially for Potatoes, which are covered with 2 or 3 inches of this compost when they are planted, and the most satisfactory results are obtained. In the yard also were hot-water pits with plunged material for starting Strawberries, which there throw up their flower stems before the leaves commence growing.

The kitchen garden contains the early Peach houses and more vineries. We were taken through the earliest Peach house, which is 70 feet long by 12 feet wide. The front rows of trees are nearly 3 feet from the glass, trained on oval trellises, which gives the trees on the back wall unlimited space. Early Beatrice is grown for the first early, and is often ripe as early as the 15th of April, its earliness being its principal recommendation. In succession follow Hale's Early, a deserved favourite; Royal George and Bellegarde. Lord Napier Nec-

tarine was also thriving well, and all the trees were in excellent condition.

The early vinery is 40 feet long by 17 feet wide, and divided into equal proportions for Black Hamburgh and Muscat of Alexandria. The roots were principally inside, the outside borders only being covered with old lights, no mulching or hot manure being used. The Muscat Grape is ripe in May. The next house we entered is of the same size as the last, and is a succession to it, or to follow in May and June. In this house the varieties are Muscat of Alexandria with the Duke of Buccleuch and Golden Champion worked on them, and the whole are ripe together in May and June.

Five thousand Strawberry plants are forced, the varieties being chiefly Vicomtesse Hericart de Thury, Keens' Seedling, and James Veitch. A number of iron shelves are provided, which are suspended in the early vineries and peacheries. These are covered with grass turves. By this simple means less water is required, and at the same time the liquid manure given renders the turves invaluable as a compost for Pines.

The conservatory is a very fine structure, the library and billiard room opening into it. The pillars are all festooned with *Cobaea scandens*, which also hangs gracefully down from the roof, and imparts a charm to the whole place, which must be considerably enhanced when it is lighted up at night by Chinese lanterns. Some fine specimens of *Cordylina indivisa*, and the Tree Ferns *Dicksonia antarctica* and *Cyathia dealbata* were large and fine. From the roof was also suspended some large baskets of *Adiantum cuneatum*, which looked most graceful. A few choice flowering plants were employed to enliven the structure.

The flower garden is a neat geometrical figure, and was filled with a few choice colours, self beds predominating; but in all cases the colours so blended as to give a pleasing effect. Another feature of the flower garden was the employment of *Periwinkle*, *Ivies*, &c., in some beds, edged with *Erica hercynica*, these contrasting happily with the portion devoted to flowers.

In the kitchen garden we observed every part in excellent order and the crops productive; indeed every department of gardening at Hutton Hall is carried out in the most successful manner. Mr. McIndoe's success as a cultivator is established, and he is fortunate in having an employer who assists him in carrying out his ideas in a liberal way.—B. COWAN.

WORK FOR THE WEEK.

KITCHEN GARDEN.

SEED should now be sown of the main crop of Borecoles, Savoy, and Broccoli. Veitch's Spring White, Cooling's Matchless, Leamington, Lauder's Goshen, and Model are good varieties of the latter for succession in the order named. A sowing of Cauliflowers should be made. Walcheren and Autumn Giant are good for this sowing; also Cabbage for autumn use, Heartwell, Incomparable and Nonpareil Improved being suitable varieties. The principal crop of Carrot seed should be sown at an early date; make also a first sowing of Beet; Dewar's Dwarf and Veitch's Improved Black are suitable for the crop, as they attain a good size early. The principal sowing should be deferred another month, as in a favourable season the plants are apt to run if sown earlier. Salsify and Scorzonera should be sown now in drills 15 inches apart, which will also be a suitable distance for Carrots. Of the latter James's Intermediate and Red Surrey are the best for general crop. Make successional sowings of Peas and Broad Beans, also Lettuces, Radishes, and Spinach in proportion to the probable demand. A small sowing of Turnips should be made to succeed the early crop, which seldom stands long early in the season. Sow on a warm border seeds of Basil and Sweet Marjoram, also seeds of most herbs on a sheltered but not shaded border. Complete the planting-out of Cauliflowers, Cabbages, Lettuces, and the Tripoli section of Onions. Plantations of Rhubarb should be attended to, and any deficiency through being lifted for forcing should be made good. Division of the roots which have been forced is a common practice in private establishments, but it is not so good as dividing roots that have not been subjected to so weakening a process. Detach each piece with one or more crowns and a number of roots, and plant them 3 feet apart in rows 4 feet asunder. Johnstone's St. Martin's is far the best for forcing. Remove the protecting material from about the crowns of Globe Artichokes, employing instead about 3 inches depth of manure. The suckers should be thinned, leaving four to six of the strongest to each stool. Plant strong suckers on well manured ground 3 feet apart in rows 4 feet asunder; but we prefer to divide the old plants so as to retain a portion of their roots, choosing pieces with three or four offsets and planting them rather deeply—4 feet apart every way; supply water if dry, and mulch at once with short manure. These plants will afford heads in autumn. Complete the planting of Sea-kale, whether roots which have been taken up for forcing, young plants,

or clean healthy roots cut into lengths of 4 to 6 inches, planting them 1 foot apart in rows 18 inches to 2 feet asunder. When Sea-kale has been forced on the open quarters the fermenting material and pots should be removed as the crop is cut, placing over the crowns a small quantity of light material as a protection from frosts until fresh growth has commenced, when it should be cleared from the crowns and forked in between the rows. Select a sheltered situation and make a sowing of Celery. Plants from this sowing, being raised under hardy conditions, are better for general planting than those which under other circumstances are often drawn up weakly. Sparrows have a particular relish for the tops of Peas, which should be dusted whilst damp with dry wood ashes or soot and quicklime, which will also prevent the depredations of slugs.

Forcing Department.—Ventilate freely in suitable weather all frames containing crops of vegetables. Supply water plentifully to Radishes and Carrots, thinning out the latter when sufficiently advanced, keeping a good look-out for slugs. Supply Dwarf Kidney Beans copiously with water and weak liquid manure after they commence flowering, and keep the pods closely picked as they become fit for use. Any spare pits or frames may be sown with these Beans, which will afford a supply some weeks before those in the open ground, and with means of affording heat they will come earlier; indeed sowings should be made for another month in heat to maintain a succession. Osborn's Forcing is with us far the best for forcing, never failing to produce abundantly, and is very dwarf. Sow Vegetable Marrow seed in gentle heat for an early crop. The principal sowing of these and Ridge Cucumbers should be made about the middle of the month. Prick off Celery plants in boxes or frames close to the glass. Any spring-sown Cauliflowers, Lettuces, &c., when sufficiently advanced and hardened off may be planted out. Peas that were sown in turves, when well hardened off should be planted out in warm borders.

FRUIT HOUSES.

Pines.—Plants started into fruit early in the year will be fast approaching the flowering period, and will be benefited by an occasional sprinkling overhead at the time the house is closed, but when in flower they must not be so treated. The foliage being as yet tender, it will be desirable in the case of houses with large panes of glass to afford a slight shading for an hour or two in the hottest part of the day for a few weeks until the foliage becomes inured to the sun's influence. When the flowering is over the fruit will advance rapidly if the roots are in good condition, and plentiful supplies of weak liquid manure will be requisite. Attend to the ventilating early in the morning, commencing when the temperature is at 80°, and closing at 85° with sun heat. Keep the atmosphere moist when the house is closed, the bottom heat steady at 80° to 90°, the night temperature 70°, and 75° by day artificially. As soon as the suckers appear remove them all except one to each plant by screwing out their centres.

Figs.—Surface roots are of importance in the cultivation of fruit trees, especially those grown under glass with the roots inside. No fruit tree produces such roots so freely as the Fig if means are adopted to encourage them. A mulching of about 8 inches thickness of partially decomposed manure will attract the roots to the surface and prove beneficial if it be kept moist. Liberal supplies of water or liquid manure will now be necessary for the earliest trees to assist in swelling off the fruit satisfactorily. Continue to pinch out the points of the young shoots, and thin all the overcrowded growths. No kind of fruit tree is more benefited than the Fig by the full rays of the sun; shading of any kind, even too much of their own foliage, is injurious. The temperature may now be increased to 60° or 65° at night, and in the daytime from 75° to 80° with sun heat. Attend to tying-in the shoots, allowing space for growth. The earliest trees in pots will soon commence ripening the fruit, especially the small varieties, when the supply of water must be gradually reduced, and gradually withhold moisture from the atmosphere, keeping the top lights open constantly. Still continue to supply liquid manure to those trees on which the fruit is swelling, and syringe the trees at closing time, ventilating well in favourable weather. The cuttings recently inserted should be shifted into 5-inch pots when fairly rooted, and finally into pots 12 inches in diameter. Good drainage is necessary, and turfy loam with about a tenth of old mortar rubbish and a sixth of decayed manure forms a suitable compost, potting firmly.

Cherry House.—As soon as the shoots of Cherry trees have made four or five joints pinch out the points of such as are to form spurs, and heel-in carefully at the base those that are intended for furnishing the trees. The trees should be syringed twice every day, and the surface of the borders kept constantly moist, attending to ventilating as advised in our last calendar. It is always advisable in early forcing that the roots of the trees be confined to the house, as it accelerates the progress of the trees and crop, though more attention is needed in watering. Give a good soaking of water, and if the crop is heavy and the trees not very vigorous liquid manure should be applied. Black aphides usually make their appearance, and repeated fumigations must be resorted to so as to entirely exterminate it, or it will spoil the appearance of the fruit.

Peaches and Nectarines.—The latest trees will be in full bloom

or fast approaching that condition, and as the flowers are very abundant they should be well thinned, particularly on the under side of the shoots. Failing bees (the best fertilisers) artificial impregnation must be resorted to, dusting over every blossom when the pollen is ripe with a camel's-hair brush, a feather, or some other light soft substance, selecting the early part of fine days for the operation. Where there are means of affording heat the temperature should be maintained at 50° to 55° by day and 40° to 45° at night, in all instances accompanied by slight ventilation at the top of the house, which should be increased when the temperature reaches 50°. In unheated houses commence ventilating at the same temperature, and close at 65°. There must not be any deficiency of moisture in the inside border. Disbudding should be attended to early—as soon as the shoots can be displaced with the finger, and be followed up day by day until only the shoots required for future bearing or the extension of the trees are retained—viz., one from the base of the shoots now fruiting, and another above the fruit. In the case of trees not full grown it will be necessary to leave shoots about 15 inches distance apart, calculating from the base on last year's growth, to form the bearing shoots of next year, the terminals being trained in their full length as space permits. Closer training is often practised, resulting in weak overcrowded growth, not nearly so satisfactory as growths fully exposed to light and air. Thinning the fruit in the succession houses should be attended to when fairly set and commencing swelling, removing the smallest first and those on the under side of the trellis, beginning with the weakest parts of the trees, thinning proportionately more there than on stronger wood, which from carrying more fruit will tend to the equalisation of the vigour of the tree. Heeling-in the young shoots should also commence early, which is of the utmost importance where symmetrical training is considered, and in securing the growth to the trellis space must be left in the ties for the swelling of the shoots. Syringing must be practised twice daily on all trees not in flower, so as to keep red spider in check, which must not on any account be allowed to retain a hold, or it will materially affect the present and the succeeding crop. The afternoon syringing should be done at closing time, so as to have the foliage nearly dry before night. Weakly trees swelling their fruit may be assisted with weak liquid manure, mulching the border with short partially decayed manure, which will keep the roots at the surface, but will be of little use unless kept moist. Continue the temperature advised in our last calendar for the earliest trees, being careful to observe that stoning is complete before increasing the temperature. In the next succession house started early in the year the fruit will soon be stoning, and will require care to prevent sudden check by cold air in the day and too high temperature at night; 60° to 65° at night, 5° less on cold nights, and 70° to 75° by day with sun are sufficient. The fruit being all set on the trees started in February allow a night temperature of 55° to 60°, ventilating above 65°, allowing an advance from sun heat to 70° or 75°, but with full ventilation.

PLANT HOUSES.

Stove.—Palms will be making strong growth, and must have plenty of moisture at the roots and be kept free from insects, or their foliage will become seriously disfigured. The plants also should be placed upon a hard bottom. Marantas will require shade in bright weather, but it must only be slight, or the growths will be drawn and the beauty of the leaves destroyed. Young plants of Eucharis must be shifted into larger pots and encouraged to make as strong growth as possible. In potting the bulbs should be buried 2 or 3 inches beneath the soil, turfy loam being suitable. Amaryllises making growth may be encouraged with weak liquid manure. These plants do not require so much root room as many plants, but they do not make such strong growth nor flower so satisfactorily when cramped as when liberally treated to fresh compost and root space in proportion to the increased size of the bulbs. Clerodendron fragrans is not only fine in colour but fragrant; its single pipes mounted are useful for bouquets. It likes warmth and light, succeeding well in sandy loam with a little leaf soil and sand. Alcasia metallica and A. Veitchii should be potted without delay, as unless the soil is replaced annually they do not thrive satisfactorily. The pots should be half filled with drainage, employing a compost of peat, sphagnum, and crocks, with some pieces of charcoal. Gloxinias producing their flowers should be kept as near the light as possible, as at a distance from the glass both leaf and flower become drawn. Hoya bella and H. Paxtoni coming into flower should be kept at the driest end of the house, the flowers being most useful for bouquets if the plants are not kept too moist. *Æschynanthus grandiflorus* and *Æ. Lobbianus* are fine for late summer flowering. Cuttings may be now inserted around the sides of 6-inch pots filled with sandy loam and peat and sand. When they fill the pots with roots shift them into 8 or 9-inch pots and grow them on in a light position. Their bright-coloured bunches of tubular-shaped flowers are very effective, being well adapted for baskets.

Orchids.—Dendrobiums will require more water at the roots, but it must be carefully given, and they must not be overpotted. Such species as *D. Cambridgeanum*, *D. Devonianum*, *D. Parishii*, *D. Wardianum*, and many others are best grown in baskets suspended from

the roof, but strong-growing species as *D. Farmeri* and *D. densifloram* should be grown in pots. They do well in fibrous peat, sphagnum, and charcoal, thorough drainage being necessary. Kept or top-dress any plants making new growths. With the increased power of the sun the East Indian plants will require syringing overhead on fine days, even in mild but dull weather it will be necessary now that the plants have fairly started into growth; and the surface of the pots should have a damping with a syringe or fine rose watering pot; these plants generally requiring more atmospheric moisture than heavy root waterings. Plants on blocks must be syringed two or three times a day, and shading must be employed only to exclude the fierce rays of the sun. *Cattleyas* when growing like plenty of moisture, hence they should be divided from those not in that condition. *Cattleya labiate* and *Lælia elegans* should be placed at the warmest part of the *Cattleya* house, they require good fibrous peat and plenty of drainage. *C. gigas* and *C. Dowiana* do best in a day temperature of 60° to 70°, and should never be subjected to less than 55°; they root freely in fibrous peat and charcoal. *Burlingtonias* though having beautiful flowers are seldom seen, yet they are easy of cultivation, doing well in rather deep baskets filled with charcoal and sphagnum somewhat loosely, giving them plenty of heat and moisture when growing, hanging the baskets rather close to the glass in the East India house. *Anguloas* and *Lycastes* should be repotted, employing a mixture of peat and sphagnum, with charcoal about the size of nuts, providing efficient drainage, as they require abundance of water at the roots. *Odontoglossums* and *Masdevallias* will need a good watering every fourth day, and *Oncidium macranthum* and *O. serratum* should be kept wet. *Odontoglossum citrosimum* must be kept duly supplied with water at the roots, and when the flowers are open remove the plants into a dry house as a safeguard against spot.

TRADE CATALOGUE RECEIVED.

Charles Turner, Slough.—*Catalogue of Florists' Flowers and Miscellaneous Plants.*

TO CORRESPONDENTS.

. All correspondence should be directed either to "The Editors" or to "The Publisher." Letters addressed to Mr. Johnson or Dr. Hogg often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

Correspondents should not mix up on the same sheet questions relating to Gardening and those on Poultry and Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

ADDRESS (E. R. P.).—Write to Messrs. Wm. Paul & Son, The Nurseries, Waltham Cross, Herts.

PINE APPLE CULTURE (T. S.).—Not knowing your mode of culture we cannot guess the cause of failure. Obtain our "Pine Apple Manual." You can have it free by post if you enclose thirty-two postage stamps with your address.

GLENTON GREEN GOOSEBERRY (G. J. P.).—Glenton Green (York Seedling, Hedgehog of some) is medium-sized, oblong, narrowest at the base. Skin rather thick, very hairy, green, and with whitish veins. Bush pendulous, and an excellent bearer. Young shoots downy and sprinkled near the base with small prickles. Leaves downy above.

ROCK SALT FOR ASPARAGUS BEDS (F. M. S.).—Provided the lumps are crushed nearly or quite as fine as ordinary salt it will answer equally well. The term "broken-up" which you employ is very indefinite. We prefer common salt, as being more convenient for application to *Asparagus* beds generally and to ground intended for other crops particularly. Your other question shall be answered next week.

PECULIAR MUSHROOM (J. B.).—Many strange freaks of growth are frequently observed in Mushrooms, but the specimen sent exhibits a combination of tissues that is seldom seen. One Mushroom appears to have become inverted on another in an early stage of growth, and in consequence the cellular tissue of the pileus of one has become united to that of the other, thus giving the appearance of a twin Mushroom with two stalks.

HABROTAMNUS UNHEALTHY (G. M.).—Assuming the plant was not injured by frost during the severe weather its present unsatisfactory condition may be caused by the roots penetrating an ungenial soil, or having come in contact with some injurious substance as you suggest. We should cut it closely in, and also dig a trench round the plant and under it, removing the old soil, and filling in with fresh in which decayed vegetable refuse forms a considerable part. By this means you would encourage fresh root-action, to be followed by healthy growth.

HYACINTHS DWARF (Mrs. L. D.).—Your Hyacinths with "stunted flower spikes and dwarf foliage" were probably potted late—i.e., in the spring instead of the autumn, and have consequently not made sufficient roots to induce luxuriant growth. Bulbs potted in October and rightly treated always produce finer spikes than do others that are not potted until February. We have had many complaints of Hyacinths this spring, the cause of which we attribute in the majority of cases to the bulbs not having ripened well last year.

PROPAGATING ALOYSIA CITRIODORA (Margaret).—If you do not possess a heated frame or house you may make cuttings of the old wood before fresh growth commences, and insert them in pots filled with sand, the tops

of the cuttings only just protruding through the surface. A portion of them may strike, but they are less certain to emit roots than if they had been inserted in the autumn. A better plan is to strike young growths in heat. These when about 3 inches in length and just a little firm, if inserted in sand under a bellglass and placed in a brisk temperature, shaded and watered as needful, strike readily.

GOOD PEAS (H. T. K.).—The selection of Peas is generally determined by the cost of the different varieties. *Princess Royal* is a good and cheap Pea, growing about 8 feet high. *Maclean's Wonderful*, G. F. Wilson, Dr. Hogg, and *Veitch's Perfection* are all varieties of established merit, and do not usually exceed the height you name. You may sow them in the order in which they are mentioned. A much quicker way of dispersing the pollen on Peach trees than with a small camel's-hair brush is to sweep the trees lightly with a plume of Pampas Grass, the same as is successfully done by Mr. Ollerhead of Wimbledon, and which has been previously alluded to in the Journal.

VINES NOT BREAKING (J. C. B.).—The only plan we can suggest to induce your Vines to break more regularly is to train them in a horizontal position, or to bend them so that their ends point downwards, and syringe them frequently, maintaining a moist atmosphere and rather brisk heat. But if the Vines have been weakened by overcropping or are otherwise not in good health you will find a difficulty in inducing free growth. You supply no information respecting the age and condition of the Vines. Your best plan will be to ask a competent gardener to inspect them and advise what course to adopt under the circumstances. Perhaps you trained up too many young canes last year, causing overcropping, and the wood consequently was not matured.

STRIKING MARECHAL NIEL ROSE (W. J. S.).—Select stout short-jointed side shoots that have grown about 3 inches, sever them close to the stem, remove one or two of the small leaves at the base, insert the cuttings in silver sand under a bellglass, and plunge the pot in brisk heat in a propagating case or heated frame. The work must be done quickly, and the foliage must be kept fresh by shading and sprinkling as required. Yet the glass should be dried occasionally, and the cuttings must have all the light they can endure without flagging. With care and good attention roots will soon be emitted, and the cuttings must then be immediately placed in single pots and grown on under glass. The Pea you name can be had from Messrs. Veitch & Sons, Chelsea.

PRUNING YOUNG VINES (Kens).—The young newly-planted canes that are swelling their buds freely should not be shortened now, as bleeding would ensue. It will be much safer to rub off the buds from the upper portion of the cane down to the base of the rafters. One strong young growth extending to the top of the house during the ensuing summer will form a much better foundation for a fruitful Vine than a weakly leader and a number of still weaker lateral growths.

MELON PIT (R.).—The plants we presume will be trained to wires overhead. These should be a foot from the glass, and the fruit will hang several inches below the trellis. You will in this case not have sufficient height unless the central path is sunk a foot or more below the general ground level. You only allude to "hot-water pipes passing through the chamber." You will require others for affording the necessary top heat. Two 3-inch pipes passing round the pit would do unless you intend forcing very early, when 4-inch pipes would be preferable. The more piping you have the less fuel you will consume, and the more healthy will the heat be for the plants. The pit is quite deep enough—a foot in depth of good soil will grow Melons well, the greater portion of it to be applied at intervals in the form of top-dressings, the plants having in the first instance been set out on hillocks.

TRANSPLANTING CALCOLARIAS (A. L. T.).—As the cuttings were only inserted an inch apart, and the plants are now "tall with large leaves," they must be potted or transplanted without delay or they will be spoiled. First pinch the tops off the plants to encourage side growths which you will see forming in the axils of the leaves. If the plants are potted they should be placed in 4 and 5-inch pots; small 3-inch pots are of no use, as the plants would be speedily root-bound, and if planted in that state they would not make free growth, and many of them would probably die during the summer. A suitable place for planting depends on circumstances. Frames can seldom be spared for this purpose. A sheltered border is a very good place. Enclose a portion of space with boards affixed on edge with the aid of stakes. Make the soil rich and free by a plentiful addition of leaf soil, decayed manure, or vegetable refuse; in this enclosure plant the *Calceolarias* 9 inches apart, place rails across at suitable intervals, and cover with mats or canvas during bright days for a time and cold nights, attend carefully to watering, and you will soon have fine plants; or you may plant in prepared trenches, like deep Celery trenches, and protect with any material at command.

FORCING HOUSE (Kittie).—Of your plan we think A the best, but we should continue the same elevation and width for the forcing house as the existing greenhouse, dividing the forcing house by a partition of glass, and so arrange the hot-water pipes that each house could be heated separately or together, taking the main flow and return pipes through the greenhouse and one forcing house in a flue, which should be covered, or the heat in the greenhouse will be more than is necessary at times, having separate pipes for heating that structure. You will need valves upon both the flow and return pipes near to where they leave or join the flue and return main. By the above plan you can have the pit for bedding plants in front of the forcing house, and would give more room than either B or C, with no more if not less expense. We should have the pathway 8 feet wide; 3 feet 6 inches width of bed will answer, with 1 foot 6 inches of depth above the bottom heat. Four-inch pipes are best, and will be necessary if you carry out the suggestion given above—viz., have the forcing house a continuation of and attached to the greenhouse, but if not we should still prefer the 4-inch in preference to others of less size. The ventilation proposed is sufficient, it being immaterial whether you have it on one or both sides of the house; but if on one the lights must open the whole length of the house, instead of alternate openings on both sides of the ridge.

NAME OF FRUIT (B. R.).—Royal Codlin.

NAMES OF PLANTS (North Wales).—The specimen with fleshy leaves is *Hoya bella*, the others were too imperfect to determine with accuracy. (A Reader).—*Helleborus cupreus*. (A Subscriber).—1, *Fuchsia parviflora*; 2, *Resembles Dacrydium Franklini*, and may be increased by cuttings inserted in sand under a bellglass. The other specimen was too withered to be recognisable. (W. Roberts).—Forms of *Narcissus Pseudo-Narcissus plena*, and *Arabis variegata*.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

DEEP AND SPRING DRAINING.

(Continued from page 248.)

In continuation of this subject we wish to call the attention of the home farmer to the various soils which are naturally dry. We shall find in examining the best soils that although both the surface and subsoils may vary, yet that the subsoil is always sufficiently porous to relieve the surface of superfluous moisture. Our chief object in draining should be to imitate Nature, and make rain water our friend and not our enemy, to cause it to descend through the soil, and be removed after it has done its work. It will be noticed that the best soils and those not requiring to be drained artificially are the various loams on the surface, together with the sands and gravels, which we often find as fertile land, and these are nearly all found resting upon such porous land as chalk, gravel, sand, marly or porous clay, called mild brick earth, and with some other strata, especially sand stone and stone brash, form the principal aids to fertility in our most productive land.

We must now call attention to some mistakes which have been made in draining in days gone by. In some undulating land we once placed drains across the fall of the land, thinking to cut off the water and prevent its passing on to land at a lower level. In those mixed soils—which are, however, composed of different strata in the hilly land—we find that the different layers of earth in the subsoil are generally lying one above another like a number of planks, but not with regularity. Hence the necessity of draining, because the loose soils carry the water; but when it meets with a layer of impervious clay or other obstructive soils the water is cast up on the surface, being unable to pursue an even course underground. It will be found that generally the water issuing at the hill side cannot be effectually cut off by diagonal drains, as the land will be often found to be too wet between the drains; whereas if the same extent of draining had been cut in one direction—namely, up the incline, all the strata would have been divided, both porous and obstructive, and the land laid perfectly dry. We have redrained various fields the second time, and the description just given represents the reasons for our altered opinion upon the draining of such hilly land.

We now proceed to give illustrations of the draining carried out upon land under our agency. We will take first a piece of commonable or waste land recently enclosed, at least it was so at the time the draining was done, about seven years ago. The land was let to an enterprising and industrious tenant for the purpose of gardening; it was a deep bed of gravel slightly mixed at one end, and a bog of quicksands at the other end, with a fall of 20 feet on the surface, the bog being at the lowest part of the field. At the time of letting the land we engaged to drain the bog, but the quicksands were so deep and the land so elevated above the bog that it prevented us from adopting our usual plan of cutting off the quicksands by a deep drain under the hill, because we could not find an outfall for the water at a sufficient depth; we were therefore obligated to cut a number of drains 5 feet deep instead. These drains were placed about 12 feet apart, leading into a main drain with three outfalls, so that in case one became choked there would still be two in operation. The outfalls were made up with brickwork, so that in this loose and false soil they may not give way by the continual flow of water. The tiles used in these drains were not pipes, for we did not consider them safe, even if they had been used with collars, as they would be liable to choke with sand; we therefore used 8-inch arch tiles at top. But for the bottoms we could not trust to the ordinary flat tiles, which are about a foot long, as they would have had too short a bearing upon the false land below, for in some places a pole could be run down 12 or 16 feet without any impediment; we therefore adopted the

plan of using narrow slates about 6 inches wide placed at the bottom, and as they were about 2½ feet long this gave a good bearing. In some of the softest places, however, we trod into the sand some heather stems before laying the slates to prevent their sinking. The great advantage of slates used for the bottom instead of tiles was that the sand could not possibly collect upon them, and the drains run as clear and free from sand now as when the work was first done. Upon this mode of draining it is, however, quite impossible to be sure that the entire surface will be made completely dry, because where there are decided upright bird's-eye springs, our drains being cut at regular intervals may or may not touch and relieve all of them. At the end of a year, however, after the work had been done, in accordance with our description, we found it necessary in two or three cases to cut a cross drain communicating with those on either side of the spring which we wished to relieve, and thus the land has been made perfectly dry. Our tenant also, having cast and wheeled down earth from the high ground to improve the old bog, has made it now capable of bearing any kind of produce; it has, however, been during the past five years one of the finest and most productive strawberry gardens we have ever seen, and the strong gravel soil, as well as the bog land, is now an excellent illustration of the value of draining.

It often happens that on a farm of good land, where the soils may be called mixed, that although various fields may be of great value, yet in some instances the subsoil may be such that in some parts the water may be thrown up on the surface and totally ruin it for profitable cultivation, although the top soil may be of the highest value for agricultural purposes. An illustration of this occurred upon our property in a field of 12 acres of capital hazel loam soil. When we entered upon the occupation in the year 1890 it had recently been drained by our predecessor by a single drain cut across the middle of the field, which was slightly undulating, with a tract of meadow land adjoining at a lower level, and affording a good outfall for any draining which may be done. This land on the surface was nearly uniform, being, however, a somewhat stronger soil in some parts. Now, although the surface was nearly all alike it proved on being drained that the subsoil varied much, and several fields adjoining were situated upon a higher level, and were really good and dry land, simply because the subsoil was sufficiently porous to convey any superfluous rainfall away. When, however, these loose strata of sand and marly brick earth had conveyed the water in the subsoil to the middle of the field a very strong body of springs arose sufficient to render upwards of 2 acres of land completely valueless, in consequence of a strong bank of gravelly clay, and impervious to water, found in the subsoil, which compelled the water to rise to the surface. This being really good land in its composition was, of course, well worth the expense of draining. One drain about 6 feet deep was cut across the field just above the part injured by the springs, which broke up nearly at right angles across the field; the drain was put in with arch and flat tiles, which was the only way or fashion of tile-draining at that period, and having a good and sufficient fall by an outlet into the meadow below had a good effect to a certain distance. The body of springs were too many and too wide for a single drain to lay the whole of the land dry situated below them, and it was fortunate that no more than a single drain was cut in the year that it was done, because when we entered upon the farm the first time the land was in fallow we could in the month of March see very plainly that a portion of the field below the drain was still too wet for profitable culture; we therefore proceeded to cut another drain of the same depth as the previous one, and in the same direction joining the main, and thus giving the same good outfall to both drains; the two drains effectually dried the land, and it is to this day as nice land as we ever had under cultivation.

(To be continued.)

WORK ON THE HOME FARM.

Horse Labour.—Very little delay to the horse labour has occurred since last week, and as the grass is now growing fast in meadows and park land it is well that the land should be rolled with the

heaviest roller on the farm. Planting potatoes will still be going on, also drilling barley. We must, however, object to sowing barley on loamy land in high condition after roots which have been fed off by cattle with cake, because it is very likely to produce too much straw, and is not likely to produce a sample of malting grain, whereas drege corn would flourish immensely and produce a full crop both of corn and straw. If barley is sown under the above-named circumstances it is better not to plough the land and make it too hollow and loose. We prefer to use the scarifier only, and by harrowing and rolling obtain a tilth sufficient to drill the seed in, particularly in a dry season; for after ploughing the land often becomes too dry, because we find the barley not only germinates better after scarifying but stands better in dry weather and does not suffer so much from the wireworm. This enemy to farm crops was destroyed for many years by growing potatoes, as when the potatoes are sold the wireworm goes with them. No farm ever suffered more from wireworm than ours before we cultivated potatoes, but after a course of cropping with this root we seldom saw such an insect upon the farm. We must advise the home farmer to look well forward, and if there is the least probability of the farm work getting into arrears to engage the service of steam power to assist in the cultivation for root crops. Another matter is also worth his notice—namely, to so cultivate his land as to be prepared for a dry season, and then if it should prove a wet one he will still have been correct in his management.

Hand Labour.—The men in many cases will be required to assist the women in couching, the land being in general so foul with couch on all mixed or loamy soils this year. In order to accelerate the work of couching we do not advocate giving the lumps of couch grass so much harrowing and rolling as will enable it to be burnt in small heaps in the field. We prefer to save a good deal of labour by carting the lumps of couch away with some earth attached to a heap to decay and make valuable soil for various farm purposes. It saves time in making the fallow, because as fast as the carting away is done the ploughs may commence work again; whereas, if the harrowing and rolling had been continued so that the couch may be free to burn, not only some considerable time would have been spent in the work, but it often happens when the work is done rain ensues and stops the burning, whereas carting can be done irrespective of the weather. The women should also now be employed in taking up docks and similar weeds, and we not only like to have the docks taken up before the usual weeding time when cutting up the annual weeds is done, a small pickaxe being used for the purpose pointed at one end with a narrow cutting edge at the other end. In this way the roots of docks and annual thistles may be taken up in an entire state, whereas when the spud only is used the roots are cut up into pieces and often replanted instead of being uprooted and entirely destroyed. The home farmer must urge the shepherd to pay great attention to any sheep or lambs which may be suffering from lameness, being the effect of either foot rot or epidemic. We never feared the lameness in our sheep or lambs, and for a number of years we never suffered 6d. per head loss during any season; but it required constant attention, because when foot rot prevailed we found it necessary to coop the sheep daily and treat every fresh case with our remedy, which was complete. The cows are at this time due to calve—in fact, many have dropped their calves before this. In weaning our heifer calves for dairy purposes we remove them from the cows at a few days old, but sometimes as soon as they fall, giving them new milk only for a few days, after this a mixture of skim milk. At a fortnight old we commence giving them balls composed of cake meal and barley or bean meal; they soon learn to take this out of the feeder's hand, and eventually take it from a trough as pudding. When, however, they begin to eat this may be reduced in quantity or discontinued altogether when there is an abundance of grass, yet the allowance of a little bean meal serves to keep them healthy, especially in wet and changeable weather. The calves intended for baby beef are allowed to suck the cows until they are about ten or twelve weeks of age, and during this period they receive meal balls, so that when they are weaned they may be enabled to live upon artificials and mangold or green fodder, and never to go out to graze but live entirely under cover.

DEATH OF MR. E. HEWITT.

OUR readers will regret to hear, as the Editors do sincerely, of the somewhat sudden death of Mr. E. Hewitt of Eden Cottage, Sparkbrook, Birmingham. He was only confined to his bed two or three days. The medical men state the cause of death to be chronic gout and acute bronchitis. We can scarcely imagine our great shows without Mr. Hewitt, so long have we been used to look up to him as a veteran fancier and judge of poultry. Mr. Hewitt has long been quoted as the great authority on many breeds. He was a frequent writer in the columns of the "Poultry Chronicle"—subsequently incorporated with this Journal—and to the last was a member of its staff. Probably there is no fancier living who took to the pursuit of poultry breeding before Mr. Hewitt was known as one of its chief devotees. It may well be

so, for he was verging on the age of man, and began, it is said, to keep poultry when seven years old, which takes us back to a date not long after the battle of Waterloo!

For thirty years he had constantly been engaged as a judge at almost all our great shows, and to the last kept some of his birds, though merely as pets, for he long ago ceased to exhibit when his services became in such universal request as a judge. Many of our readers will doubtless remember that some thirteen years ago a testimonial was got up in acknowledgment of his gratuitous labours all over the country. The subscription lists appeared in our columns, and resulted in the splendid round sum of £500, besides other presents, being handed to him. Mr. Hewitt's health had for the last few years somewhat declined, and to this must be attributed the fact that his judgment of birds was latterly found to be other than it once was. We can well understand this, for we know that far younger men are frequently knocked up with a long day's judging, and confess that towards the end of it their powers of discrimination seem to fail. Even at the last Birmingham Show Mr. Hewitt took his accustomed place, and we saw him, though evidently much fatigued, hard at his work till darkness brought it to a close. His interest in all connected with poultry seemed never to fail; he might well have pleaded years as an exemption from the troublesome correspondence which the character of a judge and fancier now-a-days entails, but he never did so. We have letters from him written within the last few months on matters connected with his decisions, rather despatched than curt. He became a member of the young Poultry Club, though he refused on the ground of his frequent judging as on its Committee, he gave it the aid of his experience on many occasions.

It may not be out of place here to look back a few years, and consider what Mr. Hewitt and others who have worked with him have done for our favourite birds, and for those of our countrymen interested in the poultry yard. It seems that fifty years ago no more attention was ordinarily given to poultry in England than is now given to it in a Spanish or Chinese village. Here and there were to be seen a few quain feather-footed Bantams which "had come in a ship from foreign parts," probably in some Surrey and Sussex farmyards were kept a short-legged good strain of Dorking-like table fowls; and in the eastern counties a better race of Turkeys flourished than elsewhere. Game fowls, it is true, of beautiful plumage and high pedigree were to be found in many a park and by many a cottage, but the object for which they were cultivated is one which we cannot but condemn. Beyond this the idea of improving the races of domestic poultry had not, so far as we can gather, made any way.

The first poultry shows which we can trace seem to have taken place between the years 1840 and 1845 at the Regent's Park Gardens. They were small and not very successful affairs. The first Birmingham Show, in which Mr. Hewitt took an active part, was held in 1849. The birds were taken in without previous notice, and judged in their baskets! What a change from then to the days of three thousand and four thousand pens at Birmingham and the Crystal Palace! What a change from the smattering of knowledge possessed by a few scattered fanciers on poultry subjects, such as that reflected in Dixon's "Ornamental and Domestic Poultry" of 1850, to the scientific experience shown in the correspondence on the subject printed weekly in 1880! The number of the exhibitors in the catalogues of our great shows and the number of advertisements of and for poultry in various newspapers are evidence enough that serious attention is being largely given to the subject; that in many a household and homestead where in days of yore the poultry were thought too insignificant a department to be worth any care, now intelligence is brought to bear on the production of various races suited to various circumstances, on artificial hatching and rearing, on the hardihood and early maturity of chickens. What, it may be said, have a few ardent fanciers done to do with this? A great deal, we venture to answer. It is not the enthusiastic few who set the many to work and to think. Their hobby may seem in itself extravagant and utterly disconnected with ulterior good; but it is not so. As we have often said, were there not in the beginning some fanciers who set themselves to improve the races of our domestic creatures from an enthusiastic delight in them they would probably never be improved at all.

To Mr. Hewitt and others like him we owe much, and while we chronicle with deep regret the loss which fanciers have sustained in his death, we cannot but hope that there are others ready to carry on in an honourable spirit the labour of love which he for many years bore so well.

VARIETIES.

SYDNEY INTERNATIONAL EXHIBITION AWARDS.—These awards, we understand, have now been made. A telegram has been received at the International Exhibition Offices, Castle Street, Holborn, that a gold medal has been awarded to Messrs. J. B. Brown & Co., London, for their galvanised wire netting.

—THE next quarterly conversazione of the British Beekeepers' Association will be held on April 14th, at 6 P.M., at

the Board-room of the National Chamber of Trade, 446, Strand. Subject for discussion—"The future of British bee-keeping in a commercial point of view, and how the working classes can be most successfully aided and taught the truths and advantages of modern bee culture," to be introduced by John Hunter, Esq., of 11, Argyle Road, Ealing.

At the General Meeting of the above Association held on February 18th it was resolved to establish a reference library of works connected with bee culture. The Committee of the Society for the Prevention of Cruelty to Animals has kindly set apart a portion of their book shelves for the reception of such works. The Honorary Secretary of the Association—Rev. Herbert Peel, Abbot's Hill, Hemel Hempstead—will be obliged if members willing to contribute books for this purpose will kindly write to him, stating the titles of the works which they propose to give before sending them, in order to prevent the accumulation of duplicate copies. Mr. W. Ingram has kindly invited the members of the Association to visit the Gardens at Belvoir Castle on Thursday, April 15th, with the view of seeing the large collection of spring plants suitable for bee pasturage. Members of the Association who may wish to accept Mr. Ingram's invitation will oblige by signifying the same to Mr. Peel on or before Monday, April 5th, in order that arrangements may be made with the Great Northern Railway Company for return excursion tickets. Belvoir Castle is seven miles from Grantham.

THE PEACOCK.—The true Peacocks are Asiatic birds, and in some parts of India are very abundant, being, as a rule, un-molested by the natives, who have a great dislike to their being killed. Large flocks may therefore often be seen, and the birds are described by Indian naturalists as being even more beautiful in a wild state than they are in a domesticated condition, though it is well known what an ornament they are in gardens in this country. Scarcely anything more gorgeous can be met with in the whole range of bird-life than a male Peacock in full plumage, and the bird seems to be conscious of the admiration he excites when he displays his long plumes and gently rustles them to give effect to the beautiful "eyes" or "ocelli" which ornament his train. The long feathers which he expands in the shape of a fan are not, as is so often stated, the Peacock's tail; but are simply the upper tail coverts prolonged to a prodigious extent, the true tail feathers being very much shorter, and serving when spread as a support to the fan-like disc which constitutes so splendid an attraction in these birds. As a rule, however, the stigma which attaches to the Peacock of being a vain bird, a saying quite proverbial, is scarcely deserved, as the bird is no more vain than any other game bird at the season of love. It is to his mate that the Peacock generally shows himself off to the best advantage, though at the sight of another male displaying his tail the bird will often commence to spread his own plumes. That the object is to endear himself to the female is seen by the way in which he walks slowly in front of her, turning when he turns, and gently quivering his fan as if to attract her attention, and it is not an unusual sight to see three or four birds in the Zoological Gardens displaying themselves at one and the same time.—(From Cassell's *Natural History for March*.)

WHY MILK SOURS.—Does the housekeeper ever stop to ask herself or anyone else the question, What causes milk to sour? It is by observing, taking note of the phenomena and occurrences of life, and studying or inquiring into their causes, that we gain knowledge. Most people have a kind of vague notion that milk sours from an inherent tendency in its nature or composition, or, in other words, from natural depravity; but this is a mistake. Were there not external causes of change and decay there is no reason why milk should not keep sweet for an indefinite period. Others suppose its souring and decay is caused by the atmosphere; but there is nothing in the pure unadulterated atmosphere to cause anything to decompose and decay. The atmosphere pervades all nature, and is the great sustainer of life. Milk is a perfect food, containing all the materials for the development of all the various organs and compounds of a young animal. Let us see what it is composed of:—100 parts of fresh cow's milk contain—water, 88.80; caseine, 4.82; milk sugar, 8.39; butter, 8.00; salts, 0.49. By standing, the globules of butter, enveloped in a thin membrane of caseine, rise to the surface, forming the cream, but there is no reason why the water, sugar, caseine, and salts should not remain pure for ever in contact with pure air only. Whence comes, then, the insidious foe that brings decay and putrefaction to this life-sustaining compound? It comes from the air, but it is not of it. It is vegetable substance, a fungus whose minute invisible seeds or spores are floating in the atmosphere. Some of these enter the milk, probably, as soon as drawn from the cow, and the warmth from the milk and the presence of nitrogen in the caseine furnish the necessary conditions for the growth of these germs or ferments, and fermentation ensues. The fermentation causes the disarrangement of the constituents of the sugar, changing it into alcohol and lactic acid, and this is sour milk. That it is the absorption of spores from the atmosphere which causes the milk to sour may be proved by heating the milk to boiling point, thus killing the germs, and then canning it, excluding the air, when it will keep for an indefinite period. That it is

the fungus spores floating in the air, and not the air itself, that causes the souring of the milk, has been proved by connecting a long tube filled with cotton with the canned milk. The air will find its way through the cotton and enter the milk, but the spores will be arrested, and the milk remain sweet.—(*Toronto Globe*.)

PHYSIOLOGY OF THE HONEY BEE.—No. 5.

POPULARLY the provident instinct is that most characteristic of the bee, and has been used by philosophers and poets in all ages to "point a moral and adorn a tale." Not all the lower animals are possessed of it, most of them living from hand to mouth. Perhaps none of them have it in such perfection as the bee. It seems, notwithstanding the extreme shortness of its life, to be aware that the future may not always be as the present, and that rainy days and winter snows will alternate with days of sunshine and plenty.

As a rule, three months is in this country the limit of the period during which honey can be gathered in quantity more than sufficient for the daily needs of the hive. At the most, other two months yield a bare sufficiency, leaving seven months of the year during which there must be a constant drain on the surplus stores. Yet during these few months, in some districts only weeks, of plenty, enough will generally be gathered to secure against want till the same period returns. Stocks found in a state of nature often have such enormous surplus stores that they are safe even against a honeyless summer. In their domesticated state bees seldom have the opportunity of accumulating stores to such an extent. They are usually confined to hives so small that they are compelled to dissipate their strength in excessive swarming. But where ample breeding space is given, and liberal storage room for surplus allowed, and swarming thus reduced to a minimum, the amount of honey a stock will collect in a good season is almost incredible. Should this fail to be so, the errors of the bee-keeper and not the instinct of the bees must be held blameable. It is the part of the bee-keeper to afford every facility for the successful efforts of these instincts which are, under proper conditions, simply un-failing. Honey and pollen are the proper objects sought to be provided by the bees; but they may be taught to accept substitutes. The best substitute for honey is sugar syrup, and for pollen pea or other flour. The former is so eagerly sought by the bees that, properly speaking, they require no education in regard to it. At certain seasons they will eagerly avail themselves of any saccharine juice found in their neighbourhood, whether in sugar mills or in grocers' shops, secretions from the sap vessels of certain plants or of the aphides that haunt them, or in broken fruit. But it does seem as if in some instances they have to be educated into taking flour as a substitute for pollen. I have never had any difficulty in getting them to work on it, but I know others who have failed. Almost every day during the last two months my bees have been eagerly taking pea flour from an old skep set in the sun.

By judicious feeding the bee-keeper lengthens the season of ingathering, and therefore of breeding. His bees are thus brought up to a full strength for work when the proper honey season arrives. But he must learn also how to replace stores appropriated by himself, as well as to supplement the bounty of Nature. His first lesson in harvesting ought to be, Take away nothing but what you are prepared to replace with a proper equivalent. Now, to break up the body of a hive and destroy combs, brood, and pollen, for the sake of the inferior honey found there, is directly opposed to common sense and humanity. The honey he may replace with syrup; the combs may at great expense of food and life be rebuilt, though never so well as at first; the brood may be partially hatched out, but the pollen is never thought of by this class of bee-keeper. Better far to leave the brood compartment as if sacred, and plan to have all his surplus in separate receptacles. I am more convinced every day that bee-keepers generally attach far too little value to the proper nitrogenous food of bees. The present spring will prove fairly whether or not artificial pollen is beneficial, since there is but little natural pollen left after such a season as last. Let us have reports as to the present state of stocks that have wintered on flour candy and those that have had no such fare, and especially of stocks fed up from bees driven in the autumn. As for my stocks, all that have good queens have long been raising brood, some of them in three combs; and yet I fail to see pollen in more than one or two hives. With me flour candy has certainly proved itself the best winter food I have ever tried. It contains all the elements necessary for a healthy stock, as has been proved in several cases where not a particle of either honey or pollen was to be found at the commencement of winter. On the whole I may report that I have never wintered bees with so little loss or had them in such uniformly good condition at this season.

In previous papers I have given various instances of instinct being at fault. In the present case I scarcely dare venture to say as much. The eagerness with which the bees collect the baneful excretions of aphides is scarcely a case in point. They instinctively avoid it when nectar can at all be had, and the wise bee-keeper will carefully extract it after being gathered, for it has proved itself a most deadly form of winter supply. The case of bees so crowding their brood combs with honey that little or no breeding

can go on, leading to the almost total exhaustion of the stock, is one that the skilful bee-keeper can easily avoid to his own profit and the good of his bees. But it only proves the overpowering nature of the instinct that leads to such results. The same impulse often runs riot in cases where, generally through the faults of management, the bees get started on a plundering expedition. Truly then they fear no foe whether man or beast, but will hazard their very lives to gain the coveted sweets—a case, truly, where prevention is better than cure.—WILLIAM RAITT, *Blairgowrie*.

METAL RUNNERS FOR FRAME HIVES.

AN oft-repeated opinion that metal runners in hives are injurious has had, no doubt, an influence over exhibitors of hives at our shows; while possibly some of our judges may have imagined that the manifest advantage which a metal runner for the frame and supplies, had to be purchased at a cost of comfort to the colony; and hence this improvement, certainly one of the very greatest in hive construction made among us during the last decade, is likely to fall for a time into disrepute and disuse in consequence.

In gauging an opinion we must remember that an assertion, unless backed by competent knowledge, weighs little; and when we, who in the majority of instances receive without hesitation our drinking water from the cistern of zinc, are told that this very metal if used for runners will cause condensation and so is likely to be poisonous, we must, to be consistent, either order our zinc cisterns to be removed, or disregard the statement as a mere fancy. The fact is that brass or copper are unsuitable because they would form the poisonous carbonate of copper (verdigris), while iron would, unless tinned, suffer from oxidation; but zinc, the only metal which on account of price and general workability seems to have the necessary qualities, covers itself quickly with a thin coat of insoluble and consequently perfectly innocuous oxide, which itself protects the metal from further change. To those who do not follow this explanation the cistern will supply the refutation of the suspicion of poison, and leave us to turn our attention to the question of condensation.

The existence of metal within the hive does not lower its temperature. If part were within and part exposed to the external air the reverse would be the case. If I take a crown piece between my thumb and finger in a frosty air the coin exposes a surface from which heat is rapidly conveyed, and as a good conductor it no sooner parts with heat than it draws fresh supplies through my skin until my finger and thumb will ache; but if the coin be placed in my palm and covered by my fingers, it will, when it has once risen to the temperature of my hand, cease to abstract heat, upon which it will henceforth exert no kind of influence.

This argument does not say that the interior lining of the hive might be of metal. A good conductor would be highly uncomfortable for the bees to rest upon, since they, as the warmers of the air of the hive, are warmer than it, and *à fortiori* warmer than the hive, walls, frames, or runners. It is true that the central parts of the hive in winter, even so far from the cluster as the metal runners, will be rather higher in temperature than the outside portions, and that the metal will tend slightly to equalise these temperatures, but the conduction of heat from this cause is so infinitesimally small as to be practically nil, and my only object in mentioning it is to show that it has not escaped my attention. Besides zinc stands very low down amongst the metals as a conductor, and in addition its capacity for heat (specific heat) is small, being only one-eleventh of that of water, or as it may be stated for the benefit of those unacquainted with the scientific bearings of the matter, it would require as much heat to raise 1 oz. of water through any given number of degrees as would be absorbed by 11 ozs. of zinc while gaining the same augmentation of temperature. Thus, then, syrup holding 2½ lbs. of water and given as food at the heat of the external air will abstract as much heat from the cluster as ½ cwt. of zinc placed cold in the midst of the bees would take up.

Having, then, disposed of the imaginary danger and damages, and looking to the advantages, we find them to be immense. The frames can be easily pushed backwards and forwards five or six at a time; they are never appreciably propolisised; no jar is felt, and so the bees are not irritated, and the frames can be lifted in and out without crushing a bee except in the rarest instances. How different is it with the bar having projections on opposite ends, commonly thought to be Mr. Abbott's, although I am the inventor of it, since it was made by Mr. Abbott from my drawing. Here the frames are fixed if the hive be closed for a day only. The frames must always be lifted with more or less of jar, and the chance of crushing bees is great; in fact, if the hive be populous it is inevitable. Makers of hives with these frames see this, and so they continually reduce the thickness of the upper part upon which the frames rest, and so allow actually of that damaging cooling, to prevent which they in mistake discard the metal runner with an outside protection as complete as we may please to make it. This frame, swelling and shrinking by turns, is either too tight or too loose. If the exact distance be not preserved, as it cannot be by example when a queen cage is used, a gap is left,

and the form is very inconvenient for the extractor. These defects have prevented me from ever exhibiting this frame, while I have more than once given it up in despair after attempts at using it.

The American hives almost in every case contain some form of metal runner, and we in England with our milder winters shall no doubt soon discover that its dangers are wholly imaginary (for if real let us at least see the example), while the facilities it affords in manipulation are too great to be sacrificed.—FRANK R. CHESHIRE, *Avenue House, Acton, W.*

OUR LETTER BOX.

BEEES (Tyro).—If you wish to increase the number of your stocks let them swarm as early as they will. You can afterwards put a super on the old stock. We cannot tell where flat-topped hives can be bought. The makers should advertise. Rev. H. R. Peel, Abbots Hill, Hemel Hempstead, is the Honorary Secretary of the British Bee-keepers' Association.

WASHING OLD COMBS (B. L.).—We certainly would not use the dried comb, nor can it be properly washed; but cannot you cut away the worst parts of the comb and utilise the remainder, if only partially or slightly affected? We would advise the reserved combs to be sweetened by exposure to the air; this can be done easily by adjusting them loosely in their hives, putting it under an open shed, leaving the covers off, and raising the hive itself an inch off its board. A month's sweetening would remove all disagreeable smell and the bees would soon clean the combs. The price of the shrubs you name depends entirely on their size. They can be had, however, at a moderate cost from any local nurseryman, and should be planted in the autumn.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.					Rain.
1880.	Barom- eter at 38° and Sea Level	Hygrome- ter.		Direction of Wind.	Temp of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature.			
March.		Dry.	Wet.			Max.	Min.	In sun.	On grass.		
Sun. 31	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	In.		
Tu. 23	30.299	43.0	39.5	N.E.	42.8	52.0	32.3	101.2	28.9		
Mo. 22	30.243	38.7	35.9	N.	42.7	46.0	33.9	65.5	28.3		
We. 24	30.244	41.7	38.6	N.E.	41.6	44.0	32.6	36.9	25.0		
Th. 25	30.283	44.1	40.0	Calm.	41.3	36.0	30.9	39.0	27.7		
Fr. 26	30.142	47.3	44.4	N.E.	41.5	62.3	32.6	103.6	24.6		
Sat. 27	30.032	49.0	44.8	N.E.	42.5	62.6	36.3	111.3	26.6		
Mean.	30.157	38.4	37.3	N.E.	43.1	50.5	33.0	84.7	29.5		
Means.	30.221	43.3	40.0		42.3	54.0	33.1	94.9	25.9		

REMARKS.

21st.—Bright clear day, much sunshine, but cold wind; very bright evening.
22nd.—Cold dull day; bright starlight evening.
23rd.—Fine bright day, cold easterly wind; clear starlight night.
24th.—Very cold, and thick white frost in early morning; fine day with bright sunshine; moonlight night.
25th.—Very calm, bright day throughout.
26th.—Very fine day, bright hot sunshine and very little wind.
27th.—Overcast cold morning; clear fine afternoon; cloudy evening.
A fine bright week, but with a good deal of cold easterly wind; on the whole rather warmer than last week, but the minimum temperatures were rather lower. No rain has fallen since the 7th instant.—G. J. SYMONS.

COVENT GARDEN MARKET.—MARCH 31.

THERE is no perceptible improvement in business, the lack of animation being about as apparent as last week.

FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples.....	½ sieve	2 0 to 4 6	Nectarines	dozen	0 0 to 1 0
Apricots.....	dozen	0 0 0 0	Oranges	½ 100	4 0 to 12 0
Cherries.....	box	0 0 0 0	Peaches	dozen	0 0 0 0
Chestnuts.....	bushel	12 0 16 0	Pears, kitchen..	dozen	0 0 0 0
Figs.....	dozen	0 0 0 0	Pears, dessert..	dozen	5 0 6 0
Filberts.....	½ lb.	0 0 1 0	Pine Apples	½ lb.	1 0 3 0
Cobs.....	½ lb.	0 0 1 0	Plums	½ sieve	0 0 0 0
Gooseberries..	½ sieve	0 0 0 0	Raspberries	½ lb.	0 0 0 0
Grapes, hothouse	½ lb.	6 0 10 0	Strawberries....	½ oz.	0 4 0 0
Lemons.....	½ 100	6 0 10 0	Walnuts	bushel	0 0 0 0
Melons.....	each	0 0 0 0	ditto	½ 100	0 0 0 0

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Artichokes.....	dozen	2 0 to 4 0	Mushrooms	pottle	1 0 to 1 5
Asparagus.....	bundle	8 0 10 0	Mustard & Cress	punnet	0 2 0 0
Beans, Kidney..	½ 100	1 0 1 3	Onions.....	bushel	3 6 5 0
Beet, Red.....	dozen	1 0 2 0	pickling	quart	0 0 0 0
Broccoli.....	bundle	0 9 1 6	Parsley.....	doz. bunches	6 0 0 0
Brussels Sprouts	½ sieve	2 0 3 6	Parsnips	dozen	1 0 2 0
Cabbage.....	dozen	1 6 2 0	Pears	quart	0 0 0 0
Carrots.....	bunch	0 4 0 6	Potatoes.....	bushel	3 9 4 6
Cap-sicums.....	½ 100	1 6 2 0	Kidney.....	bushel	4 0 0 0
Cauliflowers	dozen	0 9 3 6	Radishes.....	doz. bunches	1 6 2 0
Celery.....	bundle	1 6 2 0	Rhubarb.....	bundle	0 4 0 0
Coleworts.....	doz. bunches	2 0 4 0	Salsify.....	bundle	1 0 0 0
Cucumbers.....	each	0 9 1 3	Scorzonera.....	bundle	1 6 0 0
Endive.....	dozen	1 0 2 0	Seakale.....	basket	2 0 3 0
Fennel.....	bunch	4 0 0 0	Shallots.....	½ lb.	0 8 0 0
Garlic.....	½ lb.	0 6 0 0	Spinach.....	bushel	5 0 0 0
Herbs.....	bunch	0 2 0 0	Turnips.....	bunch	0 4 0 0
Leeks.....	bunch	0 8 0 4	Vegetable Marrows	each	0 0 0 0

WEEKLY CALENDAR.

Day of Month	Day of Week	APRIL 8—14, 1880.	Average Temperature near London.			Sun Rises.	Sun Sets.	Moon Rises.	Moon Sets.	Moon's Age.	Clock before Sun.	Day of Year.
			Day.	Night.	Mean.							
8	TH	Royal Society at 8.30 P.M.	54.1	35.2	45.0	5 30	4 43	4 26	5 55	23	1 44	99
9	F	Quekett Club at 8 P.M.	54.0	35.3	45.3	5 18	4 45	4 44	7 7	24	1 28	100
10	S	Royal Botanic Society at 8.45 P.M.	55.9	33.5	44.7	5 16	6 46	5 3	8 18	1	1 13	101
11	SUN	2ND SUNDAY AFTER EASTER.	56.0	25.2	45.6	5 14	6 48	5 26	9 27	2	0 56	102
12	M	Ant. de Jussieu died, 1766, æt. 72.	55.2	36.4	46.1	5 12	6 50	5 53	10 23	3	0 40	103
13	TU	Royal Horticultural Society—Fruit and Floral Com.	55.2	33.9	44.7	5 9	6 51	6 28	11 31	4	0 24	104
14	W	Society of Arts at 8 P.M. [mittess at 11 A.M.]	57.0	36.1	46.6	5 7	6 53	7 11	noon.	5	0 9	105

From observations taken near London during forty-three years, the average day temperature of the week is 55.9°; and its night temperature, 35.3°.

CROPS AND THEIR FAILURES—BROCCOLIS.

IF I were asked to name what kitchen garden crop had suffered the most during the severe winter of 1879-1880, and had caused the greatest inconvenience, I should unhesitatingly answer the Broccoli crop. I do not include Potatoes in this comparison, for, as a rule, only early varieties are grown in gardens, and these were not nearly such complete failures as Broccoli. Potatoes can be conveniently purchased to supplement a partial failure, but it is very different with Broccoli, at least in country districts. In London an abundance of excellent heads have for a long time been purchasable, but hundreds of country gardens have not provided a single head, and gardeners and families are now feeling the loss of this esteemed vegetable.

It is not possible during such severe winters as the two last have been, when the mercury of thermometers fell to zero, and in many places much below, that the Broccoli crop can be wholly preserved; yet by a judicious selection of varieties, and a different system of culture than the one commonly pursued, much loss may be averted. The mode of culture advocated by nine-tenths of the calendar writers of trade catalogues, also by the garden instructors of the general press, and occasionally by contributors to gardening periodicals is, I do not hesitate saying, quite erroneous. Highly manured and deeply trenched ground for this crop is the very worst preparation that can be made, and next to that is too early sowing. A gross feeder the crop certainly is, but it is quite common to feed it at the wrong time and thus defeat the object it is desired to attain; and a long season is also necessary for the growth of the plants, but it is possible to make it too long under certain circumstances.

It is well to direct attention to this crop at the time when seed is usually sown, and my remarks upon it will be founded on many years of experience in its cultivation in one of the coldest districts of England. They are the results of both failures and successes, the former contributing in an important degree to the latter; the last decade of practice being one of unbroken success, for I was never without Broccoli during the Broccoli season, while in the majority of the gardens of the district the crops more than once were almost or quite destroyed. The comparative immunity from injury, however, of the crops under my charge was not so much the result of superior cultivation as to an important advantage I possessed over most of my neighbours. They had to grow their Broccoli in the rich soil of sheltered gardens, while I could grow a number of plants in the much less rich and much firmer soil of an open field. Growing a portion of the crop, as I did for some years, in a walled garden and the remainder in the field, I have known every plant in the garden killed by the severity of the winter, while in the field nearly all escaped, and eventually, for the sufficient reason indicated, Broccoli were almost banished from the garden.

The great object to be attained by cultivators of this indispensable vegetable is to grow the plants as hardy as

possible. They should be dwarf, of moderate size, with firm woody stems. Plants cannot be produced in this condition when the seed is sown very early and the crop is grown in the highly manured soil, for great size and excessive luxuriance are then certain to follow; and just in proportion as this is the case, precisely in the same proportion is the danger of the destruction of the plants by frost incurred. The evil of early sowing is lessened when vacant ground is provided and the plants are put out the moment they are large enough for planting. This is not the case in the majority of gardens, but, on the contrary, the plants have to remain long crowded in the seed or nursery beds, awaiting the removal of such crops as early Peas or Potatoes before they can be planted. By this practice a bad foundation is laid to begin with, as plants with tall, thin, and tender stems are produced which can never become so sturdy and hardy afterwards as if a different system of culture were pursued. An alternative to this necessity of waiting for ground is planting between the rows of other crops, and much the same result follows—namely, plants tall and tender instead of dwarf and hardy; and the end is too often bitter disappointment and great inconvenience, for the plants are frequently killed just before the period of their heading, and seed, ground, manure, and labour are lost.

Where ground has to be waited for to receive the plants, it is far safer to sow during the first or even second weeks of May than early in April; indeed I have on several occasions known plants raised from seed sown about the 1st of June escape the winter, when others raised two months earlier have succumbed to the severity of the frost. Seed, too, should be sown much more thinly than is customary, or the plants should be thinned before they exceed an inch in height. I know of no better plan of raising plants than sowing in drills about 8 inches asunder, and thinning-out the plants to an inch or two apart immediately the chaffinches withdraw their ravages from the seed bed. There are then quite sufficient plants left for the slugs, and even if these marauders take about half of them the remainder will be the better for the additional air they will obtain for hardening their stems. The space between the drills permits of hoeing for preventing the growth of weeds, as the plants may as well overcrowd and spoil each other as be overcrowded and spoiled by Chickweed, Groundsel, or grass. Those who have not raised Broccoli plants in the manner described have no conception of their superiority for enduring frost over those that have been permitted to half strangle themselves in seed beds in the hopeless struggle for the light and air they need to render them stout and strong. By the mode advocated more ground is requisite for preparing the plants than by the ordinary system of thick sowing, but it will be space saved in the end, as anyone may prove by giving both plans a fair trial.

The ground for the final planting of Broccoli cannot be too firm, and it only needs to be moderately fertile, neither can the position be too much exposed. Perhaps I have been fortunate in the soils I have had to manage, but I have never yet seen ground from which crops have been cleared in July

—such as Potatoes, Peas, Spinach, or Strawberries, preparatory for Broccoliis—that I would have had dug and manured before planting if the work could be done for nothing. Rather would I plant with the aid of a crowbar, as I occasionally have done on an old Strawberry bed, and the plants have always grown large enough for producing good heads. And here I will observe that the size of the heads of Broccoli is not governed by the size of the plants in the autumn so much as by their maturity. I have, with the object of securing early produce, been in the habit of planting a certain number of plants of Snow's Winter White Broccoli on a warm border in a walled garden where the soil was rich, and another portion for succession in the poorer firmer soil of an open field. The plants in the garden have invariably grown twice the size of those in the field, but I have never known them to produce such fine heads, nor to produce them so early. My successional theory has therefore been inverted; the smaller exposed, because more hardy and better matured plants, coming in first, the more luxuriant and tenderly grown following if they were not killed. In the one case the stems cut almost like Carrots, the other like wood, and the latter, as will be easily understood, were the earliest and hardest.

I have yet to say a word on manuring. According to my experience the wrong time for applying manure to this crop is in summer or before planting, and the right time is in spring before heading. Manure applied at the former period produces large leaves and succulent stems, which are an almost certain prey to frost, but applied in winter or early spring it directly promotes the growth of large crisp heads. When manure is being wheeled on vacant ground preparatory to winter digging a dressing has also been applied to the Broccoli quarters just as if they were vacant, spreading it thickly between the rows and round the stems. These being very short, the manure could be packed quite up to the hearts, and the rows being 3 feet apart and the plants not large there was no difficulty in working amongst them without breaking the leaves. Plants thus grown, supported, and protected will resist much more frost than others that have been grown to a much larger size and which are correspondingly tender. Manure thus applied goes directly to the support of the heads, and if the plants are pulled up, as they should be, at the time of cutting them, none of the manure will be wasted in supporting a strong aftergrowth of leaves, but the ground will be in good condition for crops of late Peas, Celery, or Turnips following. It is surprising what excellent heads small plants will produce by that mode of culture. I have seen some Broccoliis this year with hard stems not more than 2 to 3 inches in length, the entire plants not being a foot high, which have been subjected to frost of great intensity, and which are yielding heads 3 inches in diameter, every one of the larger and earlier-sown plants in the same garden having been killed.

Another plan of preparing the plants for winter is by laying them down, not, however, in the ordinary manner. I have, I think, referred to this practice before, and I may usefully refer to it again, for I have found it most useful. Instead of laying down the plants in November and banking up their stems on the plot where they have grown, thus occupying much ground for a long time, I have experienced a great advantage by digging them up entirely and laying them in closely in ground less valuable and more convenient for winter protection. By this mode they go into one-fourth of the space they formerly occupied, and an open quarter of valuable ground is at liberty for winter digging and early cropping. Before trenching them in, heaps of vegetable refuse have been wheeled on to a plot just as if preparing for winter digging. Forming a wide slanting open trench the plants were laid in as closely together as possible without absolute crowding and crushing; the roots were then thickly covered with the vegetable refuse, and the stems banked up with soil in the process of digging for the next trench. The readiness with which fresh roots are formed in the fresh light compost enable the plants, flaccid as they sometimes become by removal, to support heads quite as large as are required. I have known plants thus laid closely and flabby to be quite covered with snow, and thus preserved when nearly or quite all others exposed in the same garden and district were destroyed; and even if there is not a heavy fall of snow, how easy it is to cover a plot with bracken, straw, or leaves when they are readily attainable, and who will say a crop of such importance is not worthy of this protective care?

I have never known a season when it was so difficult to preserve Broccoliis as the past one. The severe frost of November

came so suddenly and severely, and injured the plants so seriously, that it was of little or no use disturbing them afterwards, and not one gardener in a hundred had an opportunity of laying them down or otherwise protecting them before. That keen November frost has done more damage than many imagine, for vegetation was in active growth and the frost was so sudden and unexpected. But protection in autumn or winter is not the sheet anchor for saving the Broccoli crop; the plants must be grown of a dwarf, sturdy, and hardy character according to some such system of culture as above indicated, and they will be in far better condition for enduring frost than they are under the early-sowing and high-manuring plan that is so frequently advocated and so commonly adopted.

A few of the varieties that I have found hardy are Snow's Winter White, seed of which should be sown in April. The true variety of this is the hardest of all the midwinter varieties, and Veitch's Spring White forms a good succession. Cooling's Matchless, Leamington, Lauder's Goshen, Carter's Summer, and Sutton's Late Queen are among other good varieties for maintaining a supply until early Cauliflowers are ready for use. Except at high altitudes and in very cold and late districts where the season of growth is short, early May will be soon enough for sowing the seed of the later varieties.—J. WRIGHT.

MARÉCHAL NIEL ROSE SPORTING.

YOUR correspondent "A. P." has indeed got a prize in his sport of Maréchal Niel, and I advise him by all means to propagate every bud from the shoots which sport—not one bud should be lost; thus the sport may be fixed and young trees raised which in all probability will produce blooms like those from which the buds were taken. I look upon this sport as the greatest event that has happened since Pradel, now nearly twenty years ago, immortalised himself by raising Maréchal Niel. Should your correspondent succeed in fixing the sport (which I have no doubt he will do), he will have the pleasure of naming it, and the satisfaction of knowing that he has produced a variety of the finest of all Roses; and I, and others I trust, will have the pleasure, in two years' time, of paying half a guinea for a plant of it about an inch long and almost as thick as a darning needle.—F. BOYES.

DRUMLANRIG.

ON visiting Drumlannrig the other day I tried to find a word that would describe and convey to others an adequate idea of the grandeur of the place. As I walked about the gardens and grounds I said to myself, "Drumlannrig is a princely place," and grand and princely it is from many standpoints. It is about fifteen miles from the town of Dumfries, three from the village of Thornhill, at which all the passenger trains on the South-Western line of railway stop by the arrangements of the Duke of Buccleuch.

In the grounds of Drumlannrig Castle there are seventy-five miles of carriage drives, and forty of these are in grass. These grass drives were first formed, covered with gravel or broken stones, and sown with grass. The grass is cut and kept short during the autumn months when the family are at Drumlannrig. These grass drives run in all directions and cross each other here and there in the woods and plantations, most of which have been planted in the time of their present owner. Spruce and Silver Firs grow well, and splendid specimens of them meet the eye at almost every turn, adding greatly to the beauty of the landscape. Araucarias and Rhododendrons abound and do well in the woods, where they appear to great advantage in winter among the deciduous forest trees, many of which have a hoary look owing to their stems and branches being covered and feathered with stone moss or a grey lichen.

There are six hundred men employed at Drumlannrig; 150 of these are under the clerk of the works, fifty-six gardeners and six extra occasionally, two hundred foresters, who keep the drives and much of the pleasure grounds outside the gardens as well as the woods in good order, a number of gamekeepers and hedgers, and agricultural men and women employed on the two home farms, on which sixty dairy cows are kept. Every department of service is kept separate and distinct, and the names of all employed and the positions or stations held by them are sent weekly to the Duke's Chamberlain, who is a country gentleman. The Duke himself, I was told, takes a great and general interest in all the departments of service on his estates, and that his liberality and kindness are manifest

in his attentions and pensions to old and deserving servants. The elegant, costly, and commodious houses provided for his upper servants indicate that their happiness and comfort are not forgotten.

We now come to notice the gardens proper, which are superintended by Mr. D. Thomson. There are ten acres of kitchen garden and forty-five acres of flower garden. In the kitchen garden there is a model bothy recently built for fourteen men (under gardeners). This bothy contains three mess rooms and a kitchen, sitting, and bedrooms—a separate bed for each man—bath-rooms, hot and cold water, gas, and a cook and housemaid wholly employed in the bothy during the day. In the flower garden there is another bothy for four men and a woman to keep it clean and cook for them. I walked through the larger bothy, and found it a model of cleanliness and comfort. Two daily newspapers and a gardening weekly journal are provided for the young gardeners, who seem to appreciate their advantages. A mutual improvement society has been established amongst themselves, and is well sustained and conducted.

On approaching the gardens from Thornhill I saw that several houses in the main range of glass had been erected in the places of others which were there seven years ago. A span-roofed house 500 feet long and 18 feet wide had been erected at the extreme south of the kitchen garden running from wall to wall. This long orchard house is one of exquisite finish and great convenience. The house is built on a basement of polished stone. A grating of cast iron resting on stone edgings runs from door to door down the centre of the house and forms the pathway. On this pathway there is a railway, on which a truck of some length and breadth runs easily along, and is useful in two ways. The truck is employed in filling and emptying the house with bedding plants, and it is used in tying the trees to the wires, all the trees being trained to wire. When this work has to be done the truck is placed on the rails; a low broad stage or step ladder is placed in the truck, on which a gardener tying the shoots can easily reach the highest point, and as easily carry himself from tree to tree by touching or pulling a wire. One half of this orchard house is filled with Peach and Nectarine trees, the other half with Plums, Pears, &c. The health of the trees and the abundance and prominence of the flower buds on them indicate fruitfulness. There are six rows of pipes in this house—two on each side, and two under the grating just mentioned. In the principal range of houses there are four vineries, an Orchid house 60 feet by 18, a cooler Orchid house 56 feet by 12, houses devoted to fine-foliage plants, Ferns, and flowering plants. Only one house of the old range has not yet been removed. There is a Melon house 80 feet by 12, two small vineries, and numerous pits in the back garden. At Drumlanrig two hundred Pine Apples are grown annually, and Mr. Thomson's success in Pine culture is remarkable. He produces fruit weighing from 5 to 8 lbs. each on plants eighteen months old. The plants that have to fruit this year are very healthy and well grown. The soil employed consists of maiden loam mixed with bonemeal and soot. The plants receive one shift only—from the sucker pots into the fruiting pots. Plunging fruiting Pines in beds of tan bark was once work dreaded by all gardeners who had it to do. This work is comparatively easy as Mr. Thomson does it. He plunges empty pots of the size of Pine pots in the tan, and when it becomes cold enough to receive the plants the pots are lifted out, and the plants are placed into the holes thus left vacant.

As the family remain three months only at Drumlanrig the object of the gardener is to have an ample supply of vegetables, fruit, and flowers then, and a grand display in the flower gardens. For this display 300,000 bedding plants are prepared and planted out every year; 30,000 of these are Pelargoniums. In walking through the houses I remarked the high finish and cleanliness of every part. Much of the internal portion is built of polished stone; the back walls are smoothly plastered, oil-painted, and look as white as snow. The Orchids are in vigorous health. Only think of four and five Vandas growing together in boxes 2½ feet wide. Vandas, as usually grown and seen, are tall leggy shapeless plants; but at Drumlanrig their tops are cut off, rooted in sawdust, and reappear as healthy dwarf plants. Where everything is well done, and every plant is a model of health and high culture, it is a difficult matter for a visitor to select any plants or any branch of gardening for special notice. In the Eucharis house I saw sixty grand plants in 12-inch pots. Calanthes and Phalenopses are grown in great abundance, and are in good health and form.

Azaleas are well shaped and well set with buds. Notwithstanding the great number of houses in the kitchen gardens there are only two stokeholes, and the smoke from the fires is carried under the ground three-fourths of a mile and rises unseen behind the wood.

Those that wish to see a nobleman's place without a ring fence, porter's lodge, entrance gate, or stiffness of any kind should go to Drumlanrig. Those, too, who desire to see a private garden establishment second to none in Great Britain, in which every hot-house is a model of good taste, wise arrangement, and great cleanliness, should go to Drumlanrig. There energy and skill are manifest in every department of gardening. The Duke's great liberality is equalled only by the ability of Mr. Thomson.—A. PETTIGREW.

INARCHING VINES.

As a rule I have always inarched what Vines I required in the autumn and with fair success, but last autumn after the Vines were inarched they did not make any progress towards uniting. At pruning time nearly all of them fell apart, and it is quite probable that Vines in other instances may have done the same; if so they may now be inarched with every certainty of success, but no attempt should be made to unite old wood at this time, the young green shoots being much the best.

Supposing the scion or young Vine to have been in a pot last autumn, and the stock an old Vine, as is generally the case, they should both be started into growth now, and when the young shoots on each are from 1½ foot to 3 feet long they should be tied or inarched together in the usual way. This is done simply by taking a slice, not too deep, off each shoot to the length of 3 or 4 inches, and binding the two fresh cut parts together with soft matting. When this is done on old or ripened wood the ties may be left undisturbed for many weeks, but when the young wood is done it grows and swells much quicker, and the ties should be loosened, not removed, ten or twelve days after the first operation. Green wood unites very fast, and in three weeks or a month they will be firmly connected. It is safest, however, not to be in a great hurry to cut that part of the scion which is not wanted below the connection until they are firmly grown together.—M. M.

VIOLETS.

MR. ABBEY's article (page 243) on Violets has been very interesting to me. May I ask if Marie Louise is the same as odorata of New York, and if De Parme is merely a good variety of the Neapolitan? I have given up the Neapolitan since I took to growing what I call odorata of New York, which I think a much superior variety and an earlier bloomer. Can Mr. Abbey tell me anything about Marguerite de Savoie, so highly spoken of, but with me no better than the old Neapolitan? I have for some years grown in cold frames one called Wilsoni, pale blue, with conspicuous white eye, very ugly, and very sweet, blooming all through the winter. It is worth growing for its fragrance. Blandyana will not keep true with me. It constantly falls back to double blue without any stripes, and most of these doubles have such short stalks as to lose their value. Will Argentæflora become fixed? In my garden blues turn white, and whites turn blue so readily that I have no faith in parti-coloured varieties. I find Victoria Regina much more tender than Czar, but the bloom is finer. Belle de Chatenay and Queen of Whites I find gives the best blooms grown in the common borders behind a hedge. I have grown about twenty-five varieties, but something like half a dozen are all that are required.—A. R., Bromley.

[Marie Louise is lavender purple with white eye, distinct from Viola odorata pendula of New York, which is of a beautiful deep mauve colour with a red eye. De Parme is a variety of Neapolitan, and with me the best of its many and variable forms. Marguerite de Savoie is only a form of Neapolitan, and neither so good nor hardy as some, but its flowers are very fragrant. Is not Wilsoni the same as Devoniensis? Charcoal and charred refuse is the best application to promote and maintain the colour of Violets.—G. A.]

PEACH PRUNING.—Permit me just to remind your readers and Mr. Luckhurst that the original question raised by the latter was the "extension system" simply, and not its "indiscriminate application," the ground now taken up by Mr. Luckhurst. As a correspondent has already pointed out, I

discriminated very clearly and pointedly the conditions under which the system was likely to succeed, and Mr. Luckhurst's protestations on that head now are quite beside the mark.—J. S. W.

CHOU DE MILAN SUISSE.

SINCE November last we have heard much about the scarcity of green vegetables and the great havoc the severe weather had made amongst Broccoli, Brussels Sprouts, Cabbages, and Savoy; and as this might occur again I think it well to point out at the present time, when seeds are being sown for next winter's supply, that there are many varieties very much harder than others. Among Cabbages or Savoy the hardest I ever cultivated is the one named above. It was introduced by Messrs. James Carter and Co., and it is thus described in their "Vade Mecum":—"The latest and hardest variety, partaking of the general character of a Savoy. It may be sown much later than the ordinary Savoy, is seldom injured by the most severe frost, and comes into use long after other varieties have disappeared." To this may be added that it resembles a Savoy very much in its style of forming heads, but it is much darker green in colour, and succeeds under the same kind of culture as the Savoy. It is also superior in flavour to any Savoy, and being extremely hardy it is well worth being generally cultivated as a first-class winter vegetable.—J. MUIR, *Margam*.

ERIOSTEMONS.

THAT extensive tract of the Australian continent known as New Holland has yielded many plants of great value to the gardener for the decoration of conservatories and greenhouses, where a continual succession of floral beauty combined with diversity and elegance of forms are required. Such well-known and handsome genera as *Acrophylloids*, *Boronia*, *Chorozema*, *Dracophyllum*, *Epacris*, *Eriostemon*, *Leschenaultia*, *Oxylobium*, *Pimelea*, and *Tetratheca* very closely rival the productions of the other great emporium of greenhouse plants in the southern hemisphere, the Cape of Good Hope. The majority of the really ornamental species from the first-mentioned district are contained in the two large natural orders Leguminosæ and Rutaceæ, the latter including the subject of these remarks—the evergreen shrubs *Eriostemons*, that although not possessing brilliantly coloured flowers, are yet attractive for their compact habit, easy culture, and the freedom with which the white or pink flowers are produced during the spring months. These qualities are amply sufficient to recommend the plants to cultivators, and several of the species are by no means rare in gardens; yet there is still room for them to become more popular, and therefore the following brief cultural and descriptive notes may be of some service to those who are desirous of forming a collection.

Like most of their allies these plants require a position near the glass in a light and well-ventilated house where the ordinary greenhouse temperature is maintained, a close damp atmosphere proving equally as antagonistic to their success as too high a temperature. Another point of importance is the drainage of the pots, which must be carefully attended to, or good treatment in other respects will be of little use. The soil should consist of three parts of peat to one part of loam, with a small quantity of sand, all thoroughly mixed, and a few small pieces of charcoal may be added to assist in preserving the soil open. The present is a good time for potting young plants, but older specimens are best potted after they have flowered. In all cases avoid giving very large shifts. Supply water freely during growth, but during the winter little is required; care, however, must be exercised to prevent the soil from becoming excessively dry, or the young roots will be injured and the growth stunted. Propagation can be effected by means of cuttings of the young shoots taken off during the present month and inserted in sand and peat, the pots being placed in a close frame or over a slight bottom heat, where the cuttings soon produce roots. *Eriostemons* may also be increased by grafting them on the allied *Correas* as stocks, and so treated they succeed very well, although this is one of the few instances known where species of one genus can be grafted on those of another. Some attention to pruning is requisite to prevent the plants from becoming leggy.

About fifteen species have been introduced to this country since 1823, but several of these are now comparatively rare. The most attractive and best suited for general cultivation are those now briefly described.

E. myoporoides.—A very robust freely branching species, with narrow, lanceolate, dark green, rigid leaves, 2 or 3 inches in length, and dotted with small glands. The flowers are white with orange-coloured anthers, and are borne in short racemes near the upper portion of the branches. The well-known traveller Mr. Allan Cunningham discovered this species on western side of the Blue Mountains, and sent the first live specimens to Kew in 1823. The season of its flowering has been strangely altered, for although October is the time at which the flowers are produced in New Holland, in this country they appear about April. The whole surface of the plant is covered with small resinous protuberances, which yield a peculiar but not unpleasant odour.

Eriostemon scaber.—A very distinct and beautiful dwarf species, of less rigid and vigorous growth than most of the other forms, and consequently much more graceful when in good condition. The leaves are dark green, linear, about an inch long, and with a rough epidermis, to which character the specific name applies. The flowers are rather small, white, tinged with pale pink, and are borne on short peduncles, thickly clothing the upper parts of the shoots. Seeds of this plant were first obtained from Sidney by Messrs. Loddiges about 1840.



Fig. 37.—*Eriostemon cuspidatus*.

Eriostemon salicifolius.—A species of erect habit, with long, narrow, dark green leaves. The principal attraction of this plant is the large pink flowers, which are solitary in the axils of the leaves. The long stamens have peculiar glandular excrescences immediately beneath the orange-coloured anthers. It is not of very free growth usually, but the beauty of the flowers renders it well worth attention. Introduced in 1822.

E. buxifolius.—A compact-growing species, with elliptical leaves that terminate in a short bristle. The flowers are of a pleasing pale rosy-pink shade, and are nearly sessile in the axils of the leaves. It is one of the earliest introduced species, having been imported from Port Jackson in 1824. The varieties ellipticus and obovatus, are known, which differ from the type in the form of the leaves as the names imply.

E. linearifolius.—One of the most attractive species, of excellent habit. The leaves are linear, smooth, and blunt at the apex, and covered with numerous glandular dots. The rose-coloured flowers are borne on short, three-branched peduncles in the axils of the leaves and near the terminal portion of the branches. They are produced very freely, and continue in good condition from March to June. First in cultivation about 1823.

E. nerifolius.—This handsome little shrub has leaves, some resembling the Oleander, hence its name. They are lanceolate, terminating in a point, and are of a deep green shade. The

flowers are rose-coloured, and produced in a similar manner to the species last described. It was introduced about the same time as *E. linearifolius*.

E. cuspidatus.—A vigorous species with lanceolate glaucous green leaves, and short racemes of large flowers, white or faintly tinged with pink. This is a useful form, as it flowers profusely from May during the greater part of the summer, and bears cutting extremely well.

E. intermedius.—This plant is compact in habit and of moderate size. The leaves are obovate and similar in colour to the last mentioned. The flowers are large, white, suffused with rosy pink, and solitary in the axils of the leaves. It has been in this country about forty years, but is not generally known. The annexed engraving represents this plant and conveys a good idea of the generic character.

The name *Eriostemon* is derived from two Greek words signifying "woolly stamen," a character which marks all the species. It is somewhat strange that by different eminent authorities the name has been considered masculine, feminine, and neuter, but the first appears to be correct, and the terminations of the specific terms are now generally given in accordance with that view.—L. CASTLE.

PACKING STRAWBERRIES.

Few fruits are more difficult to pack for travelling long distances safely than Strawberries. I have tried nearly all the methods recommended, and I now adopt one of my own which answers exceedingly well. Some time ago I had a number of tin boxes made, 8 inches in length, 4 inches in width, and 1½ inch deep. In these all the Strawberries sent away are packed. A quantity of Strawberry leaves are gathered some hours before, and they are allowed to remain in some cool place until they become quite soft. A number are then spread out on the bottom of the tin box, and I then begin packing the fruit upon them. Leaves only are used in packing; none of the fruits are wrapped in them. The first leaf being placed in the box so as to keep the first fruit that is placed in off the tin, then another leaf is placed against this fruit to keep the next one from touching it, and so on until the box is full. Only one layer of fruit is placed in each box. A quantity of soft leaves are placed over all, and the lid is put on and tied down; one box will hold about 1 lb. of fruit. Any number of small boxes may be packed, and they can then be placed in a large wooden box and be sent off together, or one may be taken in the pocket anywhere with perfect safety. In my opinion the smaller the quantity of fruit of any kind that is packed together the better does it bear transit. A large quantity in a large box is sure to be injured by its own weight and friction.—A KITCHEN GARDENER.

WHAT IS MEALY BUG?

LAST season some gardeners assured me I had that pest on my Vines, while others told me it was brown scale. Will you kindly describe the appearance of the mealy bug insect? What is wrong with Vines when the rods are spotted all the season with something like half a hempseed in shape and size, but brown; when ants are persistently running backwards and forwards on the canes in large numbers continually, the leaves get of a black dirty appearance, and when handled feel sticky, and the bunches as they ripen get covered with a disgusting-looking fungus appearance? Many of the hempseed-like-looking insects had small patches of something like fine cotton wool protruding from them. If you will kindly describe mealy bug and brown scale I shall know how to distinguish them in future.—J. ROBINSON.

I WAS pleased to see Mr. J. Muir's note on getting rid of the mealy bug. Some three years ago my gardener came in to me, and with dismay told me that we had the mealy bug in the Vines. I went out and found them in the state they first take before spreading over the Vines like little balls of cotton wool. These were all searched for, and the parts were washed with an insecticide. A sharp look-out was kept for them, but we saw no more that year. The Vines were most carefully cleaned, scraped, and painted the next year, but I had a suspicion that we should find it, and being an entomologist I knew that the best time to look for it was in the beginning of April, for then the old mother bug is to be found glued to the hard wood, and underneath her her eggs, a thousand perhaps for each. She dies on them, and becomes a hard scale hardly

visible to any but a practised eye. If taken then, and the place she was on washed with a strong insecticide, the chances are that it will be exterminated. But the wonder is where they go before they come back to lay their eggs, for the house may be painted and Vines cleaned, but still they come.—CHARLES A. CLIFTON.

[The Vines of both our correspondents appear to be troubled with the Vine scale insect, *Coccus vitis* (fig. 38), and not by the

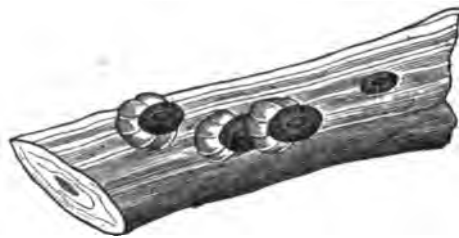


Fig. 38.

species known as the mealy bug, *C. adonidum* (fig. 39). The figures represent the female insects, which are apterous, the

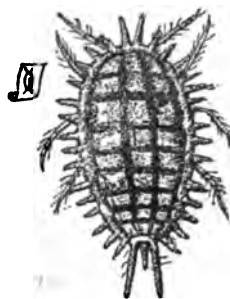


Fig. 39.

males having wings. Both sexes of *C. adonidum* move about freely, even when old; but the female form of *C. vitis* is motionless, except in a very young state, and when matured forms a hard scale, which protects the eggs, which are further covered with a woolly substance. The female *C. adonidum* (the mealy bug), however, is not furnished with a "hard scale," but more resembles a small woodlouse powdered, sometimes very thickly, with the mealy substance from which its popular name is derived. Our drawings represent a female mealy bug much magnified, and of its natural size; the scale insects with the woolly appendages are also enlarged. The respective species are easily determinable by one being hard and, when old, motionless on the Vine—the scale; the other being soft and endowed with motion, even when it has attained to maturity—the mealy bug.—EDS.]

ROSE LIFE ON THE STANDARD BRIAR.

I HAVE just read the article by Mr. George Paul, "The Survival of the Fittest," in the "Rosarians' Year-Book," and am tempted to communicate my own very limited but practical experience. In December, 1873, I began my Rose garden with eight Rose trees on half-standards—namely, Beauty of Waltham, La France, Duke of Edinburgh, Madame Victor Verdier, Madame Marie Girod, Mdle. Marie Rady, Mons. Journeau, and Clemence Raoux. Besides these I had only two others already in the garden—viz., Black Prince budded also with Madame Prevost, and a tree of Coupe d'Hébé. Now in 1880, after two winters of remarkable severity in this district, Beauty of Waltham and Madame Marie Girod are pushing rapidly into growth with good heads, and have therefore been already pruned. Duke of Edinburgh and La France have suffered, but have still good healthy wood. La France is breaking well. Madame Victor Verdier and Mdle. Marie Rady are only just alive. Clemence Raoux died early. Mons. Journeau had a tendency to blow upside down and was removed, so was Black Prince; but Coupe d'Hébé, also a half-standard, is remarkably healthy, though now a very old tree, having been in my possession twelve or fourteen years.—A. M. B.

MIXED FLOWER BORDERS IN 1879.—No. 4.

PYRETHRUM, PULMONARIA, GEUM, POTENTILLA.

THE flowers of the double varieties of *Pyrethrum roseum* were not likely to fare well in 1879 any more than those of the double annual *Asters*. Thin petals in very double flowers easily become waterlogged and stick together, and if not speedily dried turn brown and decay. But one of the best of all border plants which flowered very well last season is a single variety, an improvement, I think, on the specific *P. roseum*,

which produces abundance of flowers of a clear bright rose colour and as large as Ox-eye Daisies, on stiff slender stalks. The pleasing contrast of this colour with the rich golden disc render it a very effective flower for the mixed border, and most useful for cutting. It is easily increased by pulling off the side shoots in June, which make good plants by autumn. These Pyrethrums are of undoubted hardiness, but frequently fail to reappear after winter unless precautions are taken to keep the slugs from them. The mischief is done at the end of winter and beginning of spring. The shoots are eaten as fast as they attempt to sprout. They should be examined carefully in February, and if you see a suspicion of slime no time is to be lost. Clear the soil away an inch deep to a distance of 2 inches round the crown; next give a soaking of lime water; then fill the hollow with coal ashes or sharp sand mixed with soot. Lastly get a slice of turnip and cut it in two, and lay half on each side of the plant with the straight side towards the crown. This is the best slug trap I know, and all Pyrethrums, and Delphiniums too, should be treated in this way at once. If you should think the turnip not ornamental, remember that it will be the means of securing you ornament in June. Another Pyrethrum called *uliginosum* is most useful for the mixed border, growing 4 feet high and flowering with the Michaelmas Daisies, bearing a profusion of large elegant Daisy-like flowers. It endures both wet and cold. I say nothing of the Golden Feather Pyrethrum, as those who like autumn tints in spring are sure to have their gardens full of it already; but I may mention here that for those who like golden leaves in March *Valeriana Phu* is the best plant for a wet heavy soil.

The Pulmonarias can hardly have too strong a soil or too wet a season. They are gay and useful in March and April, but must be kept within bounds and not allowed to rob their neighbours. Last summer I traced long thick roots from some of them, travelling at a depth of 2 inches beneath the surface to a distance of 6 feet. They are sure in this way to increase fast, and the clumps must be kept small and confined to the less choice part of the border. The native *P. angustifolia* is by far the best of them, being the earliest to flower and the richest blue in colour. My stock of it all came from a plant sent when in flower in the folds of a letter from Dorsetshire, where it grows wild. It is said to be only a variety of the common *P. officinalis*, which is coarser in its habit. The most ornamental in leaf is a species with red flowers which I bought as *P. sibirica*, and I have another with purple flowers and leaves without spots. There are two or three others in cultivation.

The double scarlet Geum, *G. coccineum flore-semipleno*, as it is rightly called, not being too double to ripen seed, is a flower which it is difficult to praise too highly. Last year its flowering was almost endless; it began in May, and I gathered a fine bunch in November. The easiest way to obtain a stock is from seed. A sixpenny packet sown in heat in March last year produced me about two hundred plants, which came into flower in August, and 95 per cent. of them were double. The surplus seedlings should be planted in any corner of the kitchen garden to supply cut flowers, for which this plant is very useful. The yellow Geum *montanum*, though it does not flower so continuously, grows well in the stiff cold soil of my garden.

The *Potentilla* is another plant which likes a strong soil, and flowers well in spite of wet, though its flowers do not last long whether the day is wet or dry. Some of both the single and double varieties are unsurpassed for richness of colour, but their untidy habit of growth is a strong objection to them. They require tying, but it is hard to know how to deal with them; the ordinary mode of tying to a central support has the effect of showing only the backs of the flowers, but tying-up is a separate study, and many different methods have to be adopted for different plants.—C. W. DOD.

SPARROWS & BUDS AND SEEDS.—Of all birds I think the sparrow the most destructive. Not only will they eat the buds of Gooseberry and Currant bushes, but even Pear trees do not escape their ravages. I had one Pear tree entirely stripped of its buds before I was aware of the fact. Seeds, too, if not previously netted and well secured, are sure to be devoured wholesale as soon as they begin to germinate, for where there is a hole in the net they are sure to creep through unless you are perpetually watching. Large feathers or other material seems to have no effect after a day or two. I have thrown lime over the seeds when sown, and I have adopted the drill system this

season, thinking I might in that way escape their ravages. They are constantly nibbling Peas although 3 inches above ground. I do not wish to say anything against the feathered tribe in general, but the sparrows are the most daring and destructive of them all, I believe, in a garden, and I say, Shoot them whenever you can.—F. H. FROUD.

A TRIO OF EARLY SPRING FLOWERS.

OLD friends are the following plants, often slighted, often forgotten, but ever true; never failing to flower profusely however bleak and exposed may be the position assigned them, or however severe the preceding winter may have been; alike in hardiness, in tenacity of life, and above all in the striking effect of their blossom.

Omphalodes verna, the creeping Forget-me-not, shall have the first place. Once established it needs no further care, soon forming large tufts, or rather masses, for the creeping stems spread on all sides, throwing up handsome green foliage with a cluster of its deep blue flowers from every joint at this season of the year. Next comes *Erica carnea*, every plant now forming dense cushions of deep pink flowers, so bright and gay that a few plants are sufficient for most gardens, each soon growing into dwarf spreading tufts a foot or two in diameter. It thrives equally well in loam or peat, in soils heavy or light, in limestone and sandstone districts. The last is *Aubrietia deltoidea*, now seen in belts and beds one dense mass of purple blossom, often varied in shades of colour to rosy lilac, especially when raised from seed. This, too, thrives in most soils and situations.—EDWARD LUCKHURST.

FRUIT PROSPECTS.

I AM glad to say that the fruit prospects in the south of Scotland are very much more encouraging than they were two months ago. Apricots are very thinly blossomed, but Plums and some of the Pears look very promising. Apples are also well budded. Amongst the smaller fruits the only kind I am doubtful about are Strawberries, which were severely tried by the hard winter. I am hopeful that the six weeks of good weather last autumn may have given the blooms sufficient stamina to set. Indoors we have never had such a fine set of Peaches in the late house, although it was in November the last of the fruit was taken off last season.—R. P. BROTHERSTON.

ROSES AND OTHER PLANTS AFTER THE FROST.

NOW that vegetation is again on the move after the late severe winter, an approximate estimate of the damage done by frost may be formed. I find many plants have suffered severely, but Roses have come through the ordeal well; the Hybrid Perpetuals have just been pruned, and out of about five hundred dwarfs I have not found a single death, while out of a comparatively small number of standards two dozen are dead and many more injured. The Teas are not yet pruned, but where cut by frost seem breaking well from the bottom. Some of the newer Hybrid Perpetuals, turned out of pots in the autumn, seem of good constitution, having passed the winter quite uninjured although left unprotected through 20° of frost, notably plants of Duchesse of Bedford, Countess of Rosebery, A. K. Williams, Souvenir de Victor Verdier, and others. However, perhaps to the restricted growth of plants in pots, which would have a better chance of ripening in such a season as last, might be attributed any difference noticeable rather than to hardiness of varieties.

The severe east winds of the last week or two show where shrubs are injured or killed. Many that looked little the worse a short time ago appear badly cut now. The first plants to show the effect of the early frosts of last autumn on immature growths were the Figs and the Hydrangeas, which were cut before the leaves fell, consequently before they could be protected. All Myrtles not protected by walls are killed; several were a score of years old, and shrubs generally look much worse than last spring. Even Raspberry canes are cut back some distance, a few almost to the ground. As the Raspberry is not usually hurt by the most severe winters, it must be that the exceptionally late and sunless summer left the canes unripened as well as the growths of more tender plants. Variegated *Euonymus* all killed and many herbaceous plants. A fine plant of *Pittosporum Tobira*, which was little injured in the spring of 1879, when many established wall plants were found to be dead, is completely killed. It covered a piece of

wall 8 feet by 7, and used to be loaded with bloom every year. Of the Broccoli in the kitchen garden about one-third have survived. All fruit trees seem well set with bloom buds, Pears only excepted, but whether the bloom will prove perfect is another matter. Only Peaches and Apricots are yet open, and they appear weak.—**RAOUL** —, *St. Fugans*.

IMANTOPHYLLUM MINIATUM SUPERBUM.

I HAVE sent you by this post blooms of our *Imantophyllum miniatum* superbum, which I believe to be distinct from and a much finer variety than the one under the same name in the nurseries. Our large plant is now at its best, and is a grand specimen. The plant is 4 feet 6 inches in diameter. The individual leaves average 3 feet 6 inches long and 2½ inches broad. It has ten flower spikes averaging twenty-four blooms to each spike, and all expanded at one time. The trusses of bloom on each spike average 30 inches in circumference, and 6 inches deep in the centre of the truss. This plant is the admiration of all who see it, and I know of no plant that produced a finer effect; under gaslight it is superb. Kindly state your opinions as to the distinctness or otherwise of the variety.—**W. K. WOODCOCK**, *Thorbury, Sheffield*.

[The flowers received are 3 inches across, and many of the perianth segments exceed an inch in diameter. It is an unusually fine and richly coloured variety, surpassing *I. m. superbum*, and quite equal to Mr. B. S. Williams' continental variety *Martha Reimers*. You ought to be very proud of your specimen.—**EDS.**]

COLD FRAMES.

NOTHING is more useful in a garden than a number of cold brick-frames. At present we have thousands of bedding plants, such as East Lothian Stocks, *Lobelias*, *Ageratum*, *Verbenas*, &c., planted out in these, also *Celery* and other early vegetables. Half-hardy annuals will also be sown in quantity; and immediately these are transferred to their quarters out of doors winter-flowering plants being at present propagated, such as *Begonias*, *Eupatoriums*, *Bouvardias*, *Poinsettias*, and *Cyclamens*, will be planted out in their places. Again in autumn the frames will be filled with Lettuces, Endives, cuttings of Pansies, *Violas*, *Pentstemons*, *Carnations*, &c., to be removed in time for tender bedding plants in spring. Where brick pits cannot be obtained capital substitutes may be had from other material. The labour of watering saved during spring and summer where these frames are employed is considerable, while the plants do well without much trouble being taken with them.—**R. P. B.**

DENDROBIUM NOBILE.

IT appears that this species of *Dendrobium* is not so successfully managed amongst amateurs as is desirable, hence a few remarks on its cultivation may not be out of place. *Dendrobium nobile* is without doubt a first-class winter-flowering Orchid. It is one of the commonest of the genus, the easiest to cultivate, and, unlike most of the species, it can be easily propagated. The flowers are extremely useful in many ways, particularly for button-holes and hand bouquets. Anyone possessing say a dozen medium-sized plants, with a little judicious treatment can have *Dendrobium* flowers for four or five months through winter and early spring.

Plants that completed their growth early in autumn, and had their stems or pseudobulbs thoroughly ripened, will be in flower soon after Christmas, provided the plants have had a good rest in a cool house. When the flower buds are prominent one or more plants at a time may be introduced into the warmer house to hasten them into flower. Now that the growing season has fairly commenced no time should be lost in looking over the plants. If any of them are infested with mealy bug, scale, or red spider, which they are rather subject to, they should be carefully sponged, taking care not to injure the young growths. *Dendrobium nobile* may be grown in two ways—viz., in baskets and in pots. Plants that are grown in pots and require a shift may be at once potted, employing three parts of good fibry peat with the fine dust sifted out, and one part of chopped sphagnum, with a good admixture of charcoal and potsherds. The pots should be filled three parts full with drainage, then a layer of moss over the crocks, working in some lumps of charcoal and crocks as the potting proceeds. The plants may then be neatly staked out and trans-

ferred to the warmest house, as it delights in a high temperature with plenty of moisture at the roots when growing. The plants that have been newly potted should be watered rather sparingly for a time, giving just sufficient to keep the moss fresh until they have commenced to root freely, after which time they may receive liberal supplies of water.

If everything goes on well the plants will have finished growth or nearly so by the beginning or middle of August. It can readily be seen when the plants have finished growth by the end or terminal leaf, which instead of being in an horizontal position is always erect, coming out from the extreme point of the pseudobulb. The plants should then be gradually exposed to the sun's rays and plenty of air to assist them in ripening their growths. A very good position is on the shelves of a greenhouse or vinery. Water should now be gradually withheld, giving sufficient to keep the growths plump. If the plants are kept in the warm house too long and too wet at the roots they are apt to make a second growth, which is always weak, and to a certain extent interferes with their free flowering.

When the old plants produce laterals, which they will invariably, they may be removed the second year. A very good method is to place four or five in a small basket, employing the same kind of compost as recommended for culture in pots, but instead of using crocks for the bottom of the baskets charcoal will answer much better, as the roots will cling to it with great tenacity. The baskets may then be suspended near the roof of the house. I find such plants grown in baskets and well flowered are admirably adapted for standing in small vases for the drawing-room. The plants can be made to look very ornamental by using a few small seedling Ferns around the base. *D. nobile* will keep in good condition for at least three weeks in any ordinary sitting-room.—**W. W.**

NOTES AND GLEANINGS.

THE handsome specimen of *PRUNUS CERASIFERA* which stands opposite the Cape house at Kew is now covered with its large white Hawthorn-like fragrant flowers. Annually this tree is loaded with a profusion of its beautiful flowers, and invariably attracts great attention. It is surprising that such a really ornamental tree is not more extensively grown, for, flowering thus early in the year it is, with the exception of the Almond, quite unrivalled.

— IN the Orchid house that very handsome species *EPIDENDRUM BICOENUTUM* is now flowering. One specimen growing in a basket is bearing two long spikes with flowers clustered near the apex of each. The sepals, petals, and labellum are pure white; the latter, however, is faintly spotted with purple, which adds much to its attractiveness. This species is usually considered difficult of cultivation, but it appears to thrive well enough at Kew.

— NEAR the *Epidendrum* is a plant of the peculiar *LACINIA SPECTABILIS* bearing a pendulous spike of its curiously spotted flowers. This is a pretty species of a very small genus of epiphytall South American Orchids, and has incurred sepals and petals thickly spotted and dusted with bluish purple, the labellum being somewhat quadrangular in form, on a short stalk, and similarly spotted to the other parts of the flower.

— AN attractive work entitled "ARTISTIC CONSERVATORIES, Designed to be Constructed on the System of Messrs. Messenger & Co. of Loughborough," has been published by Mr. B. T. Basford, High Holborn, London. The book contains a large number of photo-lithographed plates of various horticultural and garden structures from designs by E. W. Godwin, F.S.A., and Maurice B. Adams, A.R.I.B.A. The object of this work is, as the preface states, "to awaken in persons of taste a desire for something more artistic in design than is usually attempted," a result which the plates are well calculated to effect, for in elegance of design and neatness of execution we have seen few that surpass them.

— AMONG the *AMARYLLISES* exhibited recently by Mr. B. S. Williams of Upper Holloway were many varieties that displayed a remarkable richness of colouring in their flowers combined with symmetry of form. Some most intense shades of scarlet and crimson were represented, the varieties *Edith*, *Niegans*, and *Exquisite* being especially noticeable. It is this brilliancy of colours that constitutes one of the chief attractions of *Amaryllises* as decorative plants, especially as at the season when they are in perfection scarlet shades are but poorly represented by other plants. Since Messrs. Veitch exhibited

their grand collection at the late spring shows a few other seedling forms of great merit have expanded, one especially being exceedingly rich and velvety, the flower being of good form and substance.

— A PRETTY and useful plant is *ROGIERA CORDATA*, sometimes seen under the name of *Rondeletia*, to which genus it is closely allied in structure. Although a native of South America and usually afforded stove treatment, it succeeds equally well in a greenhouse temperature. It is of shrubby habit, the evergreen leaves being elliptical in form and sessile on the branches. The deliciously fragrant flowers are borne in dense terminal heads, the corollas being tubular with pale pink lobes, a deeper colour tinging the outer portion of the lobes. It is not of rapid growth, but succeeds very well in a compost of loam, peat, and sand, with good drainage.

— MR. J. MUIR, Margam, informs us that a horticultural society has been started at Swansea under the name of the **SOUTH WALES HORTICULTURAL SOCIETY**, and the first exhibition will be held during August next. "In years gone by there have been several attempts made to form a society of the kind at Swansea, but from various causes failure has always been the result. Now, however, there is every prospect of the Society being firmly established and carried on successfully; the President, Mr. J. T. D. Llewellyn, being a gentleman held in high esteem for the great interest he takes in all that enhances the public good, and I think those who have seen his exhibits of late years at the various metropolitan shows, as well as his excellent writings in the *Journal of Horticulture*, will readily understand that his share in the matter will be well sustained. The Hon. Secretary, Mr. W. R. Thomas, Castle Street, Swansea, and his coadjutor Mr. Legg, have the good of the cause at heart, and although they may possess those qualities that go very far towards making any undertaking of the kind a complete success. The Committee list, besides containing the names of many well-known amateurs in the district, has also enrolled most of the leading gardeners in the neighbourhood. The prize list is a liberal one in all classes, and it only remains for the public, more especially in the immediate neighbourhood, to accord it that patronage and support so richly deserved to make the whole affair a grand and lasting success."

— Two very useful varieties for forcing in pots are **RHODOENDRON MRS. JOHN CLUTTON** and **LADY OF THE LAKE**. Both are of dwarf compact habit, with narrow dark green leaves and neat heads of flowers, which in the former are nearly white, the upper lobe being stained with yellow, and in the latter are bright rosy purple. They succeed well in pots of moderate size in a compost of peat, loam, and sand, or the two latter only, and occasional supplies of weak liquid manure when the flowers are being developed prove highly beneficial.

— In addition to the **ROSE SHOW FIXTURES** published on page 257, we have now to add that the **Brockham Show** is fixed for June 29th, and the **Uppingham Show** for July 13th.

— A CORRESPONDENT writing to us on **PEACH PROSPECTS IN IRELAND**, states that many trees under glass that usually bear good crops are casting their blossoms this year, the circumstance being attributed to the deficient maturation of the wood last year, and not to any defect of the borders or faults in management; but he wisely observes that artificial fertilisation should be resorted to aid in the setting of the fruit.

— THE schedule of the **CRYSTAL PALACE COMPANY'S SUMMER SHOW** is now published, and with it is incorporated the schedule of the **National Rose Show**. The exhibition of plants will be held on May the 29th, two prizes only being offered as usual in the classes; and of **Roses** July the 3rd. Among the prizes offered for **Roses** are Messrs. Cranston's Challenge Cup, a number of silver cups from R. N. G. Baker, Esq., John and Thomas Hollingworth, Esqrs., F. G. Oliver, Esq., W. Simons, Esq., and Messrs. Paul & Son of Cheshunt; a piece of plate from Edward Mawley, Esq., and medals from the proprietors of the "*Journal des Roses*;" and to these must be added the medals of Mons. Reanarts, the President of the **Rose Society of Antwerp**, announced by us last week, for the best Hybrid Perpetual, best Tea, and best Noisette in the Show.

— MR. SYERS of Bowdon has sent us one of his new fumigators, which appears to be well designed for its purpose,

two moveable circular slides enabling those using it to regulate the draught and combustion of material as required. In this respect it differs from others that we have seen, and is an useful garden or greenhouse appliance.

— ONE of the most attractive of **Azaleas** is the comparatively new continental variety **JEAN VERRAERE**, which has lately been much admired in Messrs. Veitch's nursery. The flowers are rich salmon pink with a clear white feathery margin, but occasionally crimson self flowers are produced. The plant is a good grower and very floriferous. It is an acquisition for decorative purposes, and is likely to be widely distributed as its merits become fully known.

— ALTHOUGH, as we remarked in a previous issue, a great deficiency of **PEACH BLOSSOM** on the wall trees at Chiswick, the trees in the orchard house there are heavily laden with fine flowers, and with a continuance of the present favourable weather a good crop of fruit should be produced.

— THE young **VINES** of **Gros Colman** and **Black Alicante** in the long corridor of the same garden are breaking remarkably well. The canes made last year are very strong, well matured, and a good foundation is laid for a grand house of **Grapes**. They are being started into growth steadily, as no one knows better than Mr. Barron how unwise it would be to exhaust the canes of sap before roots are formed to maintain the supply requisite for the healthy progress of the Vines. The Vines in the largeinery that produced such a valuable crop last year, and which had their foliage prematurely destroyed by the sudden and severe frost of November, are also breaking well, and do not appear to have been materially injured by the ruthless defoliation referred to.

— THE report and balance sheet of the **UNITED HORTICULTURAL BENEFIT AND PROVIDENT SOCIETY** shows that the Society is in a healthy state, and is managed judiciously and economically. There appears to have been no demand on the benevolent fund, which has a balance of upwards of £700, and very little on the benefit fund; but a sum of upwards of £40 has been paid to two widows, due to them from the deposit amounts of their husbands, for the Society combines the principle of a savings bank with that of life assurance, in addition to disbursing aid in sickness. The capital of the benefit fund now exceeds £1000, invested in the Bank of England. The Society numbers seventy-two benefit members, residing chiefly in the metropolitan district, but some are in the different counties of England, one in Ireland, and one in America. Mr. G. Baker, The Gardens, Coombe Bank, Kingston-on-Thames, is the Treasurer, and Mr. John F. McElroy, The Gardens, Moray Lodge, Campden Hill, Kensington, W., the Secretary of this useful Society, which is established solely for the benefit of those engaged in horticultural pursuits in any part of the country.

— WE have received from Mr. B. S. Williams of Upper Holloway flowers of a **NEW PRIMULA**, which will be sent out during the present year under the name of *P. sinensis fimbriata alba magnifica*. The flowers are of great size, about 2 inches in diameter, deeply and beautifully fringed, the colour being white most delicately and faintly tinged with very pale pink, which is slightly deeper near the margin of the corolla. The trusses are over 6 inches in diameter and very freely produced. This is an extremely attractive variety, and is likely to become a great favourite with cultivators.

SMALL BIRDS—THE BULLFINCH.

I QUITE agree with "W. R. R." as to the food of the chaffinch, and find no fault with the bird further than it is very troublesome in spring in the way of picking off the blooms of my variously coloured **Primroses** and **Polyanthuses**. In this it is most destructive, utterly spoiling one portion of my garden at this time of year.

I am quite at variance with "W. R. R.," as I was also with my dear old friend Edward Newman, as regards the bullfinch. I had the same impression as he at one time (for I have been a naturalist all my life) that the bullfinch was a useful bird; but after many years of watchfulness and also examination of the crops of the birds I have come, though somewhat unwillingly, to the conclusion, and this without any doubt, that it is one of the worst enemies a fruit-grower can possibly have. The tits, on the contrary, are to my thinking very serviceable, and many a time have I watched them at their work with great satisfaction. After seeing them pecking here and there and every-

where about a Plum tree I have examined the tree, and seldom if ever found a bud missing, their sharp tiny beaks being adapted to their habits—that of picking out eggs, &c., of insects. But it is not so with the bullfinch. As I pointed out to my much-lamented friend Edward Newman, the beak of the bullfinch is not made like that of an *insect-eating* bird, nor is it one. The ravages in a Plum and Gooseberry orchard that a pair of bullfinches will make in a season are truly wonderful. The Gage family of Plums are their especial favourites, and when they are allowed full scope they will not leave a single bloom bud on any of the trees. One year I let them have full swing, and the consequence was from over one hundred trees I did not get more than a bushel or two of Plums. Now the bullfinches are shot I have large returns. Over and over again have my gardener and myself examined the crops of the bullfinches killed, and we have found them containing nothing but *bloom buds* of the Plums, and not a trace of any insects whatever. Only this spring my gardener noticed a pair at work on a Green Gage tree. He shot the hen bird, and on examining the crop found *fifty-three bloom buds* with no trace whatever of insects, and also the buds were in very healthy condition. Therefore I wish to say it is perfectly useless to tell me or any other naturalist gardener that we do not know what we are about, and that we are all wrong, &c. I am over fifty years of age, and have been a close observer of Nature all my life, and therefore I consider that my opinion is worth something—if not to anyone else it certainly is to myself; and that opinion is that there is no bird more destructive to the fruit-grower than the bullfinch, and if they abound he will grow no fruit, no matter how well set with bloom buds his trees may be.—HARRISON WEIR.

Will your correspondent "W. R. R." (page 257) describe the insects that destroy Gooseberry and Currant buds which the bullfinches attack most? and will he be good enough to produce a single instance of these fruit crops having been sensibly injured by such bud-destroying insects? What a pity it is that the birds eat *all* the buds in hunting the destroyers of the same!—J. S. W.

CULTIVATION OF THE CUCUMBER.

THE Cucumber is said to have been first discovered in the southern parts of Africa, and like many other plants it has been greatly improved by cultivation, especially in late years, and is at the present time greatly valued in most families. As the chief object is to obtain a supply early in spring it is necessary to have a well-constructed house and the command of sufficient top and bottom heat. I grow them in a brick frame with a flue round it. The flue is covered with broken bricks or anything suitable to allow the heat to circulate freely all over the bottom of the bed, and this is covered with rough material to prevent the compost from passing down amongst the rubble. If the fire goes out at night the loose material referred to will retain the heat for hours. The compost I employ consists of turfy loam, leaf soil, and a little decayed manure well mixed together. The first seeds of Wilson's Prolific are sown early in February; they are placed singly in small pots, as the young plants do not receive such a check in shifting as when several seeds are sown together. Plant them out as soon as strong enough. To obtain a few fruits early I keep a plant in a 6-inch pot, enlarge the hole in the bottom, and plunge the pot in the bed at the back of the frame. This receives no check in planting and comes into bearing early. When the fruits begin to swell I pinch well in, the plant being removed when the frame becomes occupied with the principal stock. When these are planted out the roots soon begin to push through the soil, which are covered with rich soil as they appear. The soil is placed in the frame a few days to become warm before using, as if the roots are covered with cold soil they receive a great check. By supplying the soil gradually instead of all together I obtain fruits much finer and of better quality. The water used should always be of the same temperature as the soil in which the plants are growing; if too warm it will cause weak instead of healthy growth, also if colder they receive a severe check. No plant suffers more from a deficiency or superabundance of water than the Cucumber, or so soon shows the ill effects. The soil should not become so dry as to cause the leaves to flag, and yet water should not be given until the bed becomes slightly dry, then give sufficient to moisten the soil to its full depth. The quantity required depends on the weather and health of the plants. I supply water

in the mornings in early spring, and afternoons through the summer, closing the frames early in the afternoon. I always ventilate slightly before the temperature rises too high, but not to reduce the heat, which should increase with the ventilation, until the temperature rises to 85°, and then air may be given in quantity without reducing the heat. Cold draughts should always be guarded against, as they are very injurious, particularly in spring and autumn.

The plants are stopped as soon as they get above the second joint, which causes them to branch out freely; these I stop when the growing point is clear of the first leaf. I always use a sharp knife, as the finger and thumb bruises the growths, and the wound does not so soon heal up as when a clean cut by a knife is made. They should be stopped again after they reach the third joint, and the laterals from these will be sufficient to fill an ordinary frame. After these reach the sides of the frame they are stopped, and the result is a number of laterals showing abundance of fruit. I am careful not to allow the foliage to become too crowded, by constantly taking out inferior shoots and training those remaining so that every shoot receives a due amount of sun and light. I endeavour to keep the frame well covered with healthy foliage, by removing all the weak shoots as they appear, and never allowing them to become so crowded as to necessitate pruning large quantities away at one time. Great foresight must be used to secure an abundant and continual supply of fruit. I stop the lateral one joint above the fruit—where there is only one frame to grow Cucumbers in this is of great importance, so as to keep a regular supply during the summer months—examine the plants twice a week, taking out all growths that have borne fruit, so that new fruiting wood may be produced.

The culture of summer Cucumbers is very easy, and that is the time they are most in request. The varieties I grow for summer are Carters' Model, Battley's and Rollisson's Telegraph. These are all good. I grow them in a brick frame heated by horse manure. Such frames are only suitable for growing Cucumbers after March, as an even and lasting heat could not be maintained before. These frames are filled with hot manure in May, sufficient to raise a bottom heat of 80°; it is trodden down evenly and firmly, so that it will settle regularly. After the bed is made the lights should be placed on for a week or so, and then, if necessary, a little more dung is supplied so that the plants are close to the glass. The fruits grown in frames are subject to get crooked. The best means to remedy that is to have some glass tubes that are made for the purpose, but three pieces of board nailed together will answer the same purpose. Let the boards be 3 inches wide by 24 inches long nailed together so as to form a box without either top or ends. I have also grown Cucumbers in frames placed on a hot-bed. Horse manure and weeds are mixed well together, and made into a bed just wide enough for the frame to rest on. If the material is well shaken to pieces and levelled with the fork it will settle evenly and not require treading. Cover with decayed manure, and finally with the compost, which should be the same as before advised. When the heat has subsided to a proper temperature place one plant in each light. Do not let the plants bear fruit before they become quite strong. When the heat declines line the bed all round. Always keep a few cans of water in the sun to water and syringe with.—JAMES SIMMONDS.—(Read at one of the Sheffield Gardeners' Meetings.)

CHAPTERS ON INSECTS FOR GARDENERS.—No. 4.

NEW SERIES.

It has often been said that in various ways the entomologist has proved a true friend to the gardener by the discoveries he has made concerning the habits of many insects that are injurious to plants or which tend to disfigure them; but it is true also that entomologists, not working specially for love of gardeners and with a desire to help them, have neglected some groups of insects that offer no attractions for the cabinet and which are troublesome to hunt. As we are year by year increasing the number of those who are really naturalists and not mere collectors, we may hope before the end of this century is reached to get not only a definite idea of the number of insects that are friends or foes in our gardens, but find we know much more than at present about their habits, times of appearance, and the best modes of checking their increase. In this examination of insects we have now reached a division of the Hymenopterous order, which includes hundreds of species the economy of which is almost unknown, and not a few species that have never yet received names from our men of science.

The second division of the Terebrantia has received the name of Entomophaga from the parasitic habits of the bulk of these insects. We shall, however, be better understood when we say that it includes the Gallflies, the Ichneumonflies, and the Ruby-tails. The two first form a natural group, although having minor differences, and they have been called the Spiculifera or "Piercers," the abdomen being furnished with a delicate needle-like organ enclosed in a sheath, by the aid of which eggs are deposited either in vegetable substances or upon living insects. Amongst them there are few instances of insects of any size, the majority being small or even tiny, but wonderfully alert in their movements. To take the Gallflies first—the Cynipidae (fig. 40). We find on examination that the fly has a small head, a thick thorax, and an abdomen attached by a stalk, usually egg-shaped. The larva or grub is never to be observed feeding exposed, but it is lodged within some peculiar growth of a



Fig. 40.—Cynips q. quercusfolii.

plant induced by the puncture of the parent insect. Low-growing plants are occasionally attacked by individuals of the Gallfly race, though their preference seems to be for trees and shrubs, on which they produce a variety of swellings or unnatural growths, unsightly where they are numerous, yet not positively injurious to the life of the object attacked, or seldom so. Undoubtedly the action of developing galls is an unhealthy one, and it is astonishing that such large and peculiar growths as we frequently see should be caused by a wound made with an instrument finer than the finest needle, though in all probability a minute drop of some irritating fluid is inserted with the egg. Nor must we consider every "gall" noticeable to be the work of a Gallfly proper: some are caused by two-winged flies of the Dipterous order, some very ugly ones are chargeable upon aphides, beetles again produce others, and some are simply fungoid growths.

Those which are highest in the state are frequently selected for malicious assault, and thus the Oak—reputed to be the monarch of our British trees—is beyond all, perhaps, attacked by Gallflies. We see them in the trunk in the form of the fleshy or artichoke gall; the twigs have them in the form of the old "oak-apple" as well as in that of the new oak-apple, the round "Devonshire gall;" from the catkins hang in strings juicy galls that look like Currants; some half dozen species produce galls small or large upon the leaves—nay, even the roots do not escape, for there Cynips aptera forms chambers, in which a party of larvæ reside in company. It is a singularity in this species that both sexes are wingless. The "bedeguar" of the wild Rose, a pretty object in itself, is well known. This contains several grubs, each accommodated with a separate cell; and many species cultivated in gardens or shrubberies might be particularised upon which galls grow in most seasons. Nor does there appear to be any way of preventing the attacks of these flies. Fortunately, their multiplication is considerably checked by the parasites that prey upon the larvæ, and by rapacious flies that sometimes seize the perfect insects. Birds, it is thought, seldom meddle with Gallflies. Recent investigations prove that the interior of a gall serves as a home in some cases for a succession of grubs of different species, the grub, however, of the originator of the gall being not unfrequently either devoured or starved! Mites or Acari conclude the history of many galls, their disintegration being accomplished by the united action of a colony of these Arachnids, not truly insects although popularly believed to be. A passing reference is due to the services of one Gallfly in providing us with ink—concentrating in the Aleppo gall the astringent acids that all Oaks generate more or less. Memorable also in prose and in verse is the species that produces those "Apples of Sodom" in Syria—Cynips insana, not so called, we presume, from any lunatic tendencies in the fly, but from the deceptive character of the fruit in which the grub resides. Some of the remarkable results of Gall insects are represented on the next page.

Leaving the gall-makers we arrive at the vast family of the Ichneumonidae, with at least twelve hundred British species that have been recognised as distinct. Notwithstanding their diminutive size they are distinguished amongst the insect races by their activity in keeping down other species that destroy or damage flowers, fruit, and vegetables, and especially are they the foes of many caterpillars. The movements of an Ichneumonfly, when it is seeking upon the leaves or twigs the unlucky caterpillars that are to receive its eggs, are so peculiar

that when once observed they are not readily forgotten. Mr. Wood has aptly described them in these words—"The insect is seldom still for an instant, but runs about in a quick fussy manner, turning this way and that way, sometimes fluttering its wings as if about to take to the air, and then suddenly closing them again. Whether it is running or standing the antennæ are always on the move, quivering with incessant vibration." Some caterpillars and grubs appear to be placidly unconscious of the proximity of one of their enemies, but some, as do also other insects that are attacked by Ichneumonflies, show alarm at their near approach. In every stage of insect life—egg, larva, pupa, and imago—we have instances of the emergence of these flies from specimens that have been attacked, and the number of eggs laid by an Ichneumonfly upon a victim varies from one to about a hundred. A most curious circumstance in the history of Ichneumonidae is the dexterity some flies display in finding the exact spot where a victim lies that is hidden from view by a layer of wood or bark, or which may be concealed within a fruit. By smell, by hearing, perhaps by a sense unknown to us, an Ichneumonfly will discover a position where, by thrusting its egg-placer through some substance, the egg or eggs may reach the grub or caterpillar below.

In point of size there is a great difference between such an



Fig. 41.—Ophion luteum.

insect as Ophion luteum (fig. 41), about an inch in length, and the little Microgaster that brings to a gradual close the life of so many caterpillars of the Cabbage butterfly; but amongst various sizes and shapes it is noticeable that the Ichneumonidae have generally a rather small head, a compact and muscular thorax, wings large and elegantly veined, a slender abdomen, and long antennæ, organs which seem from their movements to be of great importance to these insects. The ovipositor or egg-placer is in several species of some length; it is usually large enough to be seen by the unaided eye, but in a few species it is hidden in the abdomen. Microgaster glomeratus, the history of which is better known than that of many of its brethren, looks almost black until it is magnified, when it glows with metallic hues. It might be said without fear of contradiction that the yearly number of caterpillars of Pieris Brassicæ killed by this small parasite exceeds the number of those that reach maturity, and yet this very parasite has another parasite, also an Ichneumonfly. Another species of Microgaster—one that is, however, rather scarce in some seasons—seeks out the caterpillars of that enemy to our Currants, Abraxas Grossulariata, and places its eggs upon them, helping materially towards their diminution. There is no doubt, indeed, that every species of caterpillar has at least one parasite; and as there are Ichneumonflies that attack a variety of species, so some caterpillars are made the mark of several Ichneumonflies, and by this means they never become plentiful. The Ophionidae, as has been stated, are very conspicuous, and also noisy, occasionally entering hothouses, where probably they are too hastily destroyed if there is a chance of killing them. It is their habit to attach their eggs to the skins of caterpillars, by a footstalk usually, but some pierce the skin and bury the egg beneath it.

Some groups of the Ichneumonidae are more particularly the foes of beetles, seeking out the larvæ or grubs of these in wood, earth, offal, or other substances; and in the case of the wire-worm and the cockchafer, for instance, we are probably more indebted to these parasites than is yet positively ascertained. The Long-tailed Ichneumonfly (Rhyssa persuasoria) hunts for the grubs of Sirex juvencus, another Hymenopterous species that is injurious to firs, and by a boring process, in which the three blades of the tail are all effectively brought to bear, it deposits eggs upon or close to the strong yet unresisting grub that is devouring the hard Fir wood. Exceedingly useful, again, are the minute species of this tribe belonging to the genus Hybrizon, for their special food is the aphid race, and the Rose often exhibits a host of shrivelled aphid skins, mementos of Ichneumon work.—J. R. S. C.

DICKSONIA ANTARCTICA.—We have here a fine specimen of this Tree Fern planted out in the conservatory. The height

of the stem is 11 feet; at 6 inches from the ground it measures 5 feet in circumference; at 5 feet from the ground 3 feet 9 inches; and at 10 feet, 3 feet. The measurement from tip to tip of the fronds is 17 feet. I have been told this is one of the finest specimens in Britain; perhaps some of your correspondents will be able to give information on this point. —R. OGSTON.

GALLS.

GALLS—the products of such insects are as described in a preceding article—are of two kinds, called respectively galls and cases, and they serve useful commercial purposes. Galls are more or less solid or ligneous, and contain one insect. Cases are hollow and horny, comprising a colony of insects.

Levant or nut galls (fig. 1), are produced as already stated in the buds of *Quercus infectoria*, a native of Asia Minor. They

are imported from Smyrna and Aleppo, and sometimes from Bombay. They contain about 30 or 40 per cent. of tannic acid—the astringent principle which converts the gelatine of skins into leather in the process of tanning. Galls, however, are not suited for this purpose, because they possess so little extractive matter, rendering leather hard and crackling.

Gallic acid is another important constituent, amounting to not more than 3 or 6 per cent. In the preparation of ink or black dye a peralt of iron is added to an infusion of nut galls, which combines with the acid above-named to produce the black tanno-gallate of iron.

British Oak galls resemble fig. 1, but are larger and of a much lighter colour.

Mecca galls, Dead Sea Apples, Sodom Apples, or Mad Apples (fig. 2), are occasionally imported from Bussorah. They are produced on a variety of *Quercus infectoria* by the *Cynips insana*. These galls, according to the Hon. R. Curzon, who

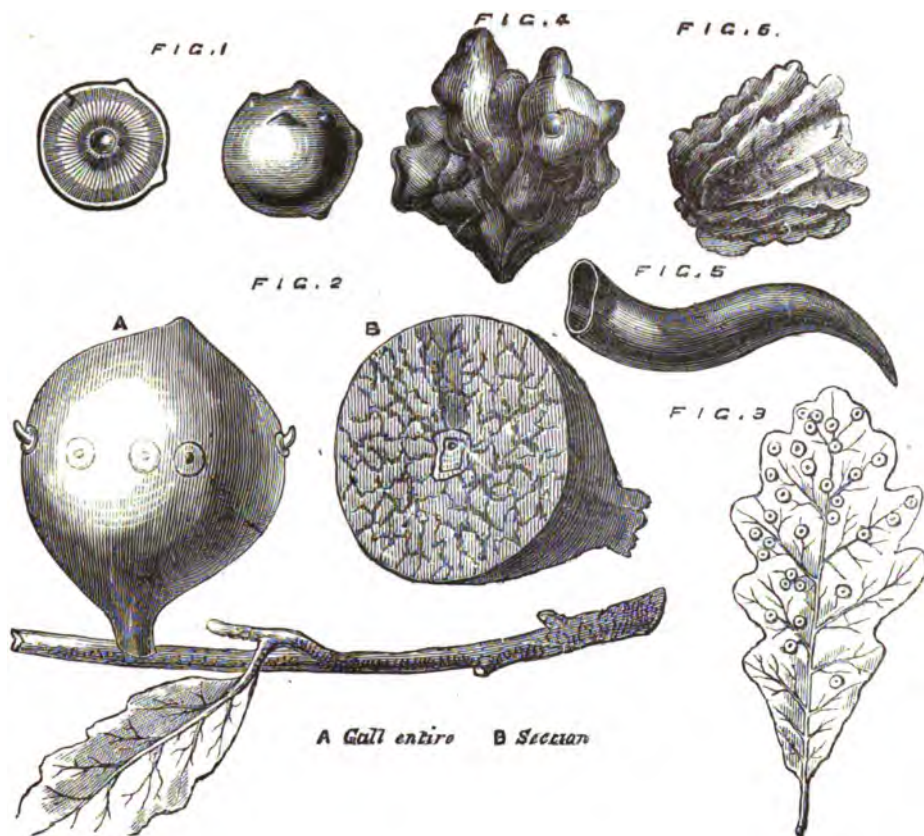


Fig. 42.

brought them from the Holy Land in 1847, are like a beautiful fruit when fresh, are of a fine purple colour, and shine brilliantly in the sun as if varnished. They are very poor in tannic acid, therefore are of much less value than those from the Levant.

Oak spangles (fig. 3), are galls formed in the substance of leaves, and ultimately burst through and appear like flat discs on the surface.

Chinese or Japanese galls (fig. 4), known in China as wo-peitsee, are leaf galls, or cases which contain a colony of insects. They are supposed to be produced by a peculiar species of aphid on a terebinthous plant.

Kakrasinghee galls, or cases (fig. 5), are from the Himalayas.

Acorn galls occur in some parts of Europe on the *Quercus pedunculata*, being produced in the acorn by *Cynips quercus-calycis*. These are known in Germany as knopperns, where they are used by dyers instead of the Levant galls.

Elm galls are the size of the first, and do not contain any astringent, but a sweet and viscid fluid. They abound in the south of Europe.

The baisonge, found on a species of Sage in the East, are

gathered and sold for food. They are sweet, and said to make a famous sweetmeat with sugar or honey.

TRANSATLANTIC ROSE-GROWING.

I HAVE received an interesting new Rose catalogue from Messrs. Ellwanger of Rochester, N.Y. It is interesting, not only as exhibiting the state of American opinion on the Hybrid Tea question, but for the paper on hybridising which accompanies it. It contains a convenient list for all who wish on the instant to write off an order, and also one of the most lovely-coloured Rose groups I have seen in a catalogue, even with a lively remembrance of Messrs. Ewings' picture a year or two ago. Readers of the Rose Journal will have noticed the announcement that the Reigate Association, under the guidance of that veteran Rose-grower their President, have taken the lead in recognising the Hybrid Tea right to a class to itself. The National Rose Society were content with turning it out of the Teas.

Mr. Wollaston of Reigate has carried a motion, warmly supported, as I have said, by Mr. Baker, that the Hybrid Teas

shall have a class to themselves. I have been, therefore, greatly interested in noticing how this question is received in America. Messrs. Ellwanger give a list of the Hybrid Teas which is virtually the same with that in Mr. George Paul's catalogue, except that he makes Reine Marie Henriette a Hybrid Tea, and they give it as a Tea. These are the ten—Bennett's Hybrid Teas, two of Levet (Mad. E. Levet and Mad. B. Violet), and one of Guillot fils. But the startling innovation is that La France as well as Cheshunt Hybrid is stated to be a Hybrid Tea and should be classed as such. I am disposed to go yet further, and say that Capitaine Christy and Boule de Neige ought also to be put in the same category. But the National Rose Society's Committee, as Mr. D'Ombrain tells us, has not yet done with this subject. There is a rising chorus of praise as to Reine Marie Henriette, but all the other new ones have, I think, still their spurs to win before the public.

As to the second part of my subject—the prospect Messrs. Ellwanger offer to us of new American Roses, the notes on the subject holds out hopes, but not much more. A Bennett of Stapleford has yet to be born there. America, however, as Mr. H. B. Ellwanger points out in his interesting paper, is the native home of the Noisette class, and has already given the world America and Isabella Gray (the latter, alas! bewitching but impracticable), also Teas, President, Isabella Sprunt, and others not yet known here. In the south their facilities for ripening must be fully equal to that of the south of France, and when American energy once grapples with a subject there is sure to be rapid progress. The other indigenous class referred to is that of Prairie Roses; these also are almost wholly unknown over here. Perhaps they answer more to our class of Scotch Roses. In both cases, I incline to think, a series of judicious blending would be likely to produce something both new and attractive.—A. C.

BROCCOLI.

THE destruction of this valuable crop by the severe frosts of the past winter has been a great loss to many gardeners who have to keep up a steady supply of vegetables all the year round. I have been very successful with my crops of Broccoli this year, although many have not been so fortunate owing to the plants having grown too much in the summer time and not properly hardened. Perhaps the past year will teach many gardeners a useful lesson as regards the cultivation of this valuable vegetable. It is a great mistake to sow the seeds broadcast on the beds as is usually done by many gardeners; they should be sown in lines and not too thickly.

A piece of not very rich ground should be selected if possible for planting on, because this vegetable will succeed best in a rather poor soil that has been manured and well dug. I selected a piece of poor ground for the Broccoli last year, giving it a fair supply of manure, digging it deeply, and the crop has been all that could have been expected. If the summer be dry an occasional watering with liquid manure from the stable, the cow byre, or the sewerage from the house will be of great advantage to the plants when they are in active growth, but if the summer be wet very little should be given. I find the following five varieties to be the best we have tried:—Backhouse's Winter White Self-protecting, heads large and compact; Grange's Autumn White, an excellent variety for early use; Snow's Winter White, a splendid variety; Elliotson's Mammoth, very large, compact, and short-stemmed; Carters' Champion, the latest I have. The first three varieties should be sown about the beginning of this month for cutting during the autumn and winter months, and the two later varieties about the beginning of next month for spring use.—JAMES TAYLOR, N.B.

NICOTINE SOAP.

TOBACCO has long been known as a powerful agent for the destruction of insects. To them its narcotic properties are fatal. Its fumes have been employed for destroying insects for more than a century, and tobacco dust has been used for the same purpose during an equally extended time. Abercrombie mentions both as being in use a hundred years ago, but the author of "Every Man His Own Gardener" makes no note of tobacco liquor; yet it must have come into use at an early date, as it is frequently alluded to by several writers at the commencement of the present century. Of the value of tobacco liquor there could not be any doubt, as it is the expressed juice of the tobacco leaf undergoing the process of

manufacture; and as the active properties of tobacco reside in the peculiar principle called the nicotine, and are due to the addition of water or slight fermentation, the residuum or extracted juice must of necessity contain more of the active principle than the manufactured leaf; hence the decoctions of the leaf are not nearly so efficacious as an insecticide as that of the liquor or juice. A pound of the strongest manufactured tobacco will only make six gallons of liquid of sufficient strength to destroy aphides and thrips, but a gallon of tobacco juice will make six to eight gallons of much greater strength at about half the cost. Indeed, tobacco powder is a much more powerful agent in the destruction of insects than fumigation, as the moisture gradually causes the particles to give out a part of their juice, and the effects upon the insects, especially outdoors, are more durable. Tobacco decoctions are certainly more effectual than powdered tobacco; but some insects, notably mealy bug, are not so easily reached as aphides or thrips, hence powdered tobacco becomes attached and assuredly kills as the narcotic is given out. Fumigation from its cleanliness and ease of application is always to be advised for the destruction of aphides and thrips under glass, but is practically innocuous in respect of red spider, scale, and mealy bug. Fumes, except those of sulphur, which is at best a dangerous remedy, are of no use; and vapours of volatile substances, such as ammonia and spirits of turpentine, are so difficult of application as to be more or less hazardous; therefore an effectual insecticide that may be used with perfect safety as regards the plants, if not difficult of application or offensive to the operator, must be a boon to gardeners. Such I have found in nicotine soap manufactured by Messrs. Corry & Soper, about which I propose to make some observations. From its title "nicotine" I was prompted not to obtain a small trial quantity but a keg. I have tried it thoroughly; the results I give, not for the benefit of the introducer solely, with whom I am unacquainted, but for those requiring a safe, efficacious, and readily applied insecticide.

My first trials were with syringing forced Peach trees, at about the stoning period, with a solution of 3 ozs. to the gallon for the destruction of red spider, it being applied with the garden engine. The result was perfectly satisfactory—not a leaf was injured, but the red spiders were killed wherever they had been reached by the insecticide. The difficulty with insecticides is to insure their application to all the parts infested, which is almost impossible to accomplish at one application, as the foliage in front throws the solution off that behind, and the insects are for the time secure, but parts not reached in the first washing rarely escape in the second. Outdoors it was brought into requisition at a strength of 2 ozs. to the gallon for the destruction of aphides, destroying green aphids at that strength; and for the Peach aphid, Cherry aphid, and Plum aphid 3 to 4 ozs. to the gallon were employed, with death to the insects but no injury in any case to foliage or fruit. What its effects would be upon the three last named at 2 ozs. to the gallon I did not ascertain by experiment, for satisfied of its safety one effectual dose is every way preferable to a number of weaker doses. At this (3 to 4 ozs.) strength it is fatal not only to red spider but thrips, and at 4 ozs. to the gallon destroys mealy bug and brown scale, a few gallons of the solution being sufficient to clean many plants, they being laid or held on their sides over a footbath to receive the liquid not retained by the plants as they are syringed, the plants being turned over so as to apply it thoroughly to every part. The solution in all cases of syringing was used at a temperature of from 80° to 90°.

To specify the plants it was used upon would occupy too much space, but I may state it was employed upon all stove and greenhouse plants having smooth leaves, and such Ferns as have smooth fronds. Great care is always requisite in applying insecticides to plants with hairy leaves and soft texture. For ordinary cleaning purposes—viz., periodical scrutiny of the plants for insects, especially scale and mealy bug, it is employed at a strength of 6 to 8 ozs. to the gallon of water, employing a brush or sponge so as to reach any insect that may be detected; and at this strength it destroys white scale so troublesome on Acacias, Oleanders, Dracænas, &c. It also destroys the last and Orange scale by syringing at a strength of 4 ozs. to the gallon. At 8 ozs. to the gallon I have used it as a winter dressing for Peaches, Vines, &c., under glass, and with the best results. It at the last-named strength destroys mussel scale on Pear and Apple trees, and is equally effective against American blight. In all cases of winter dressing a brush was used, which is a more effectual and economical mode of applying dressings than syringing. Not the least of its

recommendations is its cleanliness and agreeableness in combination with cheapness.—G. ARBEY.

PORTRAITS OF NEW AND NOTABLE PLANTS.

RUBUS PHENICOLARIUS. *Nat. ord., Rosaceae.*—"A singularly handsome Bramble, introduced from Japan into Europe by Dr. Maximovich, and sent to Kew from the Jardin des Plantes of Paris by M. Decaisne. For the first year it was put in the open ground amongst the hardy species of *Rubus*, but being nearly killed during the succeeding winter, it was transferred to the temperate house, where it thrives luxuriantly in an open border, climbing a pole 10 feet high, and would grow much higher if allowed, flowering in midsummer, and bearing in autumn a profusion of scarlet berries. It is no doubt allied, as its author observes, to the common Raspberry, which is also a native of Japan, but differs in its climbing habit, racemose flowers, and petals, and in the fruit, which, though eatable, is mawkish. The flowers are very inconspicuous."—(*Bot. Mag., t. 6479.*)

PITCAIRNIA ANDREANA. *Nat. ord., Bromeliaceae.*—"This new Pitcairnia is remarkable in the genus for its dwarf habit, broad entire mealy leaves, and simple close raceme of very large bright-coloured flowers, which shade off from scarlet to bright yellow. One of its nearest allies is *P. flavescens*, figured 'Bot. Mag.' tab. 6318. The present plant was introduced by Linden in 1872 from the province of Choco in New Granada, and about the same time was sent home from Venezuela by Roehl. It flowered at Kew in July, 1879."—(*Ibid., t. 6480.*)

HYPERICUM ÆGYPTIACUM.—"The specific name of this pretty little shrub is unfortunate, for it has never, as far as at present known, been found in Egypt. It has, however, an extensive range in the Mediterranean islands and coasts; I have examined specimens from Lampedusa, Cephalonia, Zante, and Sphacteria, and it hence may possibly occur on the coast of Egypt westward of the Nile, which has never been explored by a botanist. Its western limit is Cape Agadir in Southern Morocco, on the shores of the Atlantic, where it has been discovered by a collector employed by M. Cosson in that district. In its native state *H. ægyptiacum* is a very low-growing, often prostrate, small shrub, with very woody stout trunk and lower branches, but under cultivation against a wall at Kew it assumes an upright more twiggy habit. It was introduced into cultivation nearly one hundred years ago—namely in 1787, by Mr. Thounin, and flowers freely in late autumn (October), when from the abundance of bloom it forms a very pretty object: it is, moreover, very hardy, the specimen at Kew having survived the last hard winter with no other protection but some cocoa-nut fibre on the ground around the base of the stem."—(*Ibid., t. 6481.*)

WAHLBERGIA TENUIFOLIA. *Nat. ord., Campanulaceae.* Native of Dalmatia.—"W. tenuifolia flowered in the rockwork at Kew, from roots received from M. Fröbel of Zurich, under the name of *Edraianthus caudatus*, a species differing from this in the very short broad calyx-segments; it flowered in August of last year."—(*Ibid., t. 6482.*)

CRINUM PODOPHYLLUM. *Nat. ord., Amaryllidaceae.* Native of Old Calabar.—"The bulbs were sent not long ago from Old Calabar by the Rev. Hugh Goldie, and it flowered at Kew for the first time in November, 1879."—(*Ibid., t. 6483.*)

COMANDRON RAMONDIODES. *Nat. ord., Gesneraceae.*—"Introduced from Japan by Messrs. Veitch. Flowers in July. It has a tolerably wide range in Japan, inhabiting moist rocks in the mountains of Nippon and Kinsai."—(*Ibid., t. 6484.*)

FIR-TREE OIL AGAINST CATERPILLARS.

As correspondents desire details of my experience of destroying the Gooseberry caterpillar with Fir-tree oil, I may state that the oil was used at the end of September at the rate of half a pint to a gallon of soft water, and applied with a fine spray from a syringe all over the bushes experimented on, well wetting both sides of the foliage. A few of the caterpillars seemed killed outright, and they all either died or disappeared from the dressed bushes within two days. No injury was done to the foliage, which at that time was, of course, fully grown and hard. I should not recommend using the mixture so strong without careful experiment on young soft foliage; and acting on the knowledge gained by my experiments in the autumn, I intend as soon as the Gooseberry flowers are set to drench all the bushes two or three times, at intervals of about three days, with a mixture of half a pint to three gallons of

water. The gnat-like flies which produce the two sorts of Gooseberry caterpillar are already hovering about the bushes by hundreds on a warm day. I have seen none of their eggs yet, but they will probably be abundant in a fortnight's time, and I hope the Gooseberry flowers will then be sufficiently advanced to allow of their being dressed before the caterpillars are strong. I presume the flies which are about now will be exhausted by the time they have laid their sixty or one hundred eggs (which they do on one leaf), and that if we can manage to destroy the first batch of caterpillars before they are fully developed, the second generation, which in the ordinary way appear in a few weeks after the first, will probably be less numerous. A good sharp look-out will be necessary for some time, as all the flies are not out yet, and there will probably be a fortnight or three weeks' difference in their time of laying eggs. Of course all this is troublesome and expensive; but when it is considered that I have frequently had two men spend the best part of their time in hand-picking, and then with only partial success, and that Gooseberries with my employers are appreciated as much as Grapes, it is worth an effort, and I have made up my mind to succeed.

I am pleased to say I have quite destroyed the first batch of black fly on Cherries before the flowers are open. This was done by using half a pint of Fir-tree oil to two gallons of warm soft water in two applications.—WM. TAYLOR.

NOTES ON VILLA AND SUBURBAN GARDENING.

KITCHEN GARDEN.

THE long-continued cold and drying easterly winds and a few days of very bright sunshine have had the effect of checking the growth of vegetation generally, as well as rendering the surface soil dry and hard. The hoe, therefore, should be freely employed among advancing crops to keep the soil loose, and also in order to destroy weeds in a young state. It also tends to check the loss of moisture by evaporation. Some soils are very apt to crack during hot dry weather, and as a preventive it is advisable to work them during dry weather only, but before becoming very dry to fork into the surface a quantity of leaf soil and hoe very frequently.

Peas.—The earliest of these should be earthed up after rain. If stakes are used these should be placed in position before the Peas are far advanced; and for the early varieties they may with advantage be rather longer than the usual heights of the respective varieties, or they will probably require additional sticks later on. The stakes need not be very close together, especially if the spray be worked into the intervals between them. Sticks are frequently employed a second season, but as a rule they are very brittle and require to be shortened and resharpened. It is a good plan to mix them with or lace them in with the new stakes. Those Peas grown without stakes must be kept very clean when in a young state, as it will be impossible to safely work among them later on. Make another sowing of second early and main crop varieties Of the former Supreme, Alpha, or Advancer, and of the latter Dr. McLean, James's Prolific, Fillbasket, or McLean's Prolific are suitable, whether with or without sticks. Of taller varieties, sow Telephone, Telegraph, and Huntingdonian, or, failing the latter, Champion of England.

Asparagus.—Where the beds were heavily mulched with manure in the autumn much of it should be raked off, and a dressing of salt given. Unmanured beds should have their surface lightly pricked over with a fork and salted at the rate of a pound to every 5 square yards. The present is a good time for the formation of a new bed or plantation. No expensive preparation is really necessary, as it does well when planted in ordinary deeply dug garden soil, the manure being annually applied to the surface rather than buried deeply. The lines may be 15 or 18 inches apart, and the plants the same distances apart in the rows. Single plants dotted among fruit trees, or a single line through the rows of fruit bushes, if well manured give excellent supplies, and of good size too. When planting spread out the roots evenly and slightly below the level.

Turnips.—A few of these are always acceptable. Sow a small breadth of the Snowball on an east border in drills about 12 inches apart. If sown on a south border they are more liable to run to seed.

Broccoli.—Sow for the earliest and successional supplies. Walcheren is the earliest, and Snow's Winter White and Veitch's Autumn are valuable early sorts. Snow's is the hardest, and therefore more to be relied on. Early Purple Sprouting and Knight's Protecting should also be sown. Veitch's Autumn Giant Cauliflower ought to be generally grown. Now is a good time to sow the seed.

Savoy and Kale.—The former require a long period of growth. The earliest varieties are best for this sowing, and of these Early Ulm and Little Pixie are very suitable for small gardens. The Dwarf Green Curled and the Cottagers' Kale have done good service this season, and are to be commended. These should now

be sown. Select a good open spot for all the above, and sow thinly in shallow drills about 4 inches apart. Birds are very apt to be destructive among these seeds, and should either be kept off with fish nets or the seeds may be damped and dusted with red lead previous to being sown. Birds do not like the taste of lime and soot, and some of this should be dusted over Peas, Lettuces, and other plants attacked before the dew is off in the mornings.

Leeks and Celery.—The former if well grown are excellent and well repay the liberal treatment given. Seed of both should be sown at once in boxes or pans and placed on a gentle hotbed, or failing this on a greenhouse shelf, covering with glass and darkening. The seedlings to be eventually pricked out as will hereafter be advised, in order to have them as strong as possible by the time the ground is at liberty for their reception.

GREENHOUSES AND FRAMES.

Seeds to be Sown.—Asters, Stocks, Zinnias, Marigolds, Ricinus, Phlox Drummondii, Dianthus, Helichrysams, Pentstemons, Godetias, Nasturtiums, Pyrethrums, Amaranthus, Balsams, Zea japonica, Tropaeolums, Lophospermum scandens, Eccremocarpus scaber, Cobaea scandens, and seeds of other quick-growing plants intended for the flower garden should now be sown. A gentle bottom heat is the most favourable to the germination of the seeds, but very frequently they are reared on shelves in greenhouses; cover lightly with soil, closely covering with glass, and keeping quite dark and uniformly moist, are important points to be observed in both instances, but more especially where no bottom heat is available. They must be uncovered and the glass slightly tilted as soon as the seedlings are discernible, which, however, must be carefully shaded from bright sunshine for a time.

Fuchsias.—Old plants if still unpruned should at once be taken in hand. Pruning scissors are the best for the work, being less liable to drag off the rather brittle branches. Cut back all young growths to within two joints of last starting point to induce a strong break. Do not water for a time unless very dry, but sprinkle or syringe frequently. When they commence growth the old soil should be shaken or picked out from among the roots, shortening these if at all long, and repotting into the same size or still smaller pots according to the strength of the roots. Use clean well drained pots and plenty of crocks, covering the latter with moss should the soil be at all fine or without fibre. Three parts of turfy loam to one of either decayed manure or leaf soil with a good addition of sand or road grit, is a good compost in which to grow them, failing this any common light sandy soil may be substituted. When potting, place a layer of the roughest of the soil in the bottom, and when filling in work the plants up and down the better to evenly distribute the roots among the soil, afterwards finishing off firmly. Syringe frequently; keep close if possible, but do not water them for a few days. Cuttings strike freely in a little bottom heat, and should be potted off and rapidly grown on, pinching back and giving a shift into larger pots before they become root-bound. If they are not allowed to flower early in the season they will be found useful to succeed the old plants.

Zonal Pelargoniums.—Old cut-back plants that are breaking afresh may be treated similarly to the Fuchsias. They are very attractive when well grown, and are useful for brightening up greenhouses in the autumn. Harden off those intended for the flower garden in order to make room for other newly-struck bedding plants. If placed out in the open they must be watered very carefully in the mornings, and be covered with mats or other material at nights or during showery weather.

Heliotropes.—A very pretty variety for either the flower garden or the greenhouse is Florence Nightingale. It is of sturdy growth, blooms continuously, and the heads of bloom are large and of a deep blue colour. Cuttings of this or other varieties strike readily in bottom heat. Insert them thickly, and when struck take off their tops and strike them. Either plant the first batch in boxes or pot them off singly into small pots when they are breaking afresh after their being headed down. Any light soil will suit them.

WORK FOR THE WEEK.

FRUIT HOUSES.

Vines.—Late Vines will now be making rapid progress. Disbud and tie out as they require it. Close the houses early in the afternoon with sun heat, and maintain plenty of atmospheric moisture by frequently damping available surfaces, syringing the Vines at closing time. Late Grapes hanging in the fruit room should be examined at least twice weekly for decayed berries, and the bottles must be duly replenished with water. Young Vines planted last spring will now be breaking naturally, and when the buds have grown about half an inch a little fire heat will prove beneficial, especially on cold days. Remove all buds except one at each break, retaining the strongest, and crop lightly; but super-numeraries may be heavily fruited. Attend to thinning the bunches and berries in succession houses. Stop and remove laterals, especially where there is not room for extension, as to allow them to extend considerably or so as to necessitate large reduction of foliage at one time results in a check, very often inducing shanking at a later period. See that the borders have

plenty of water, and weakly Vines will be benefited by tepid liquid manure. The inside borders, where Vines are swelling the crops, should have a thorough watering and mulching early on a fine day, and ventilate freely to allow excessive moisture to escape. A full crop of early Grapes is a great strain on the energies of the Vines, and through in early forcing perfection in colour is not always attainable, much may be done by a liberal and constant supply of warm dry air combined with a moderately low night temperature. When hard forcing is practised red spider usually makes its appearance, and should be destroyed by painting the pipes with flowers of sulphur mixed with skim milk. Where the Grapes are fully ripe the temperature may be reduced with advantage; but a moderate moisture should be maintained for the benefit of the foliage, the moisture at this season not being injurious to ripe Grapes. Vines swelling their fruit should have a moist atmosphere, damping available surfaces two or three times a day, particularly at closing time, and if a little guano be added to the water employed for damping it will improve the Vines and act as a check to red spider; 1 oz. of guano to a gallon of water is ample, at which strength it may be used for filling the evaporation troughs. Syringing the Vines should not be practised after the Grapes are set.

Cucumbers.—Plants that have been bearing through the winter will need to be renovated at the roots, removing with a hand fork as much of the exhausted soil as is possible without much injury to the roots, and fill-in with rich lumpy compost pressed down firmly. Stopping, training, and cutting out the old growths must be followed up, and abundant waterings given as necessary. Assist plants in full bearing with copious supplies of weak liquid manure, and earth-up the roots occasionally. Damp the floors and other available surfaces before 8 A.M. and about 3 P.M., the foliage being syringed lightly on fine afternoons, and keep the evaporation troughs filled with weak guano water. There must not be any further delay in having the blinds in readiness, so that they may be employed for an hour or two at mid-day when the sun is brightest. Shading is most needed after a period of dull weather to prevent flagging. Worms may be expelled by lime water. Keep a good heat in pits and frames, lining or renewing as necessary. Train and peg out the growths, being careful in the application of water, especially over the foliage, as the nights are cold, and employ thick night coverings. Earth-up the roots from time to time. Sow seeds of the ridge varieties for planting under handlights in May, and make sowings as necessary for planting in frames and pits as they become cleared of forced vegetables.

Melons.—Plants swelling off their fruit in the early house will require to have the supports for the fruit placed to relieve the plants of their weight. Half-inch deal boards 6 or 7 inches square with a hole bored through each corner, and suspended by four pieces of copper wire from the trellis in a slanting direction to prevent water lodging, may be employed for the purpose. Pieces of slate with holes drilled in the corners are preferable to wooden supports, and glass would be still better. Remove all blossoms from such plants, also superfluous growths, stopping and tying as necessary. See that the plants do not suffer through insufficient supplies of water, affording weak liquid manure occasionally. The evaporation troughs should be filled with guano water, and a good atmospheric moisture secured by damping early in the morning and afternoon, syringing the plants lightly at about 3 P.M. on bright afternoons. Later plants will be showing fruit, and unless abundant remove the first blossoms, it being important that the female blossoms be nearly of one stage of growth. Maintain a somewhat higher temperature and drier atmosphere during the setting, only affording as much moisture as will prevent flagging. Stop the shoots at one joint beyond the fruit, but employ the knife as little as possible during the setting period. In pits and frames a good bottom heat must still be maintained, observing the conditions previously given during setting. When the fruits are set they should be placed on a piece of slate. Look out for canker at the collar, placing a little quicklime around the stem as a preventive.

Pines.—Suckers started early in March and plants disrooted at that time and subjected to similar treatment will be sufficiently rooted for their final shift, and should be attended to without delay, as it is undesirable to allow them to become root-bound. It is important that the soil be thoroughly moist when the plants are shifted. Autumn-potted suckers should also be now shifted; pots 10 inches in diameter being quite large enough for Queens, Jamaicas, and similar varieties, and those 12 inches in diameter for the stronger-growing varieties. A temperature of 95° at the base of the pots is safe for newly potted plants, but the temperature of beds wherein other plants are plunged should not exceed 90°, as above that there is danger of injury to the roots. The air should be kept well charged with moisture during the time the house is closed. Slightly ventilate the house at 80°, liberally at 90°, closing with sun heat at 85°; and lightly syringe the plants, except such as are in bloom, employing no more fire heat than is necessary to maintain the temperature at 70° to 75°. Watering will require attention about once a week.

FLOWER GARDEN.

Rockerries and hardy ferneries are perhaps the most interesting

department of a garden during the spring and early summer months. Associated with the Ferns should be, in the more open situation, such plants as Arabis, Aubrietias, Omphalodes verna, Daphne Cneorum, Anemones, Cyclamens, Geraniums, and many others which add to the beauty of the Ferns, whilst every nook and corner, especially near the walks, should be filled with Primroses, Daffodils, Harebells, Anemones, and other shade-loving plants. The old fronds of Ferns must now be cleared away. A top-dressing of peat may be given to such as require it, but by far the greater portion thrive in loam, a top-dressing of which along with some thoroughly decayed leaf soil will greatly benefit the plants. The planting of evergreens should now be pushed forward, so as to complete it before the young growths are advanced. Except for immediate effect plants of moderate size will be found to succeed the best, and in all cases every preparation should be made so that there is no delay in planting. After planting stake such as need it securely, or from being disturbed by wind they will not root well, and if a mulching of leaf soil or similar material is applied it will, by preserving more uniform moisture, facilitate root-action and be conducive to growth. Lawns will require mowing, as to allow the grass to become excessively long at this season is only to encourage the stronger and coarser grasses. The edges of walks and beds should be trimmed for the season, and walks should be well rolled down. If the latter are covered with moss it is best to turn them, and after adding a little fresh gravel roll well down in moist weather. The clipping of Ivy on houses, walls, screens, &c., should be done annually. Propagating softwooded bedding plants should be pushed forward, pricking off seedlings, and potting off or planting in frames all cuttings as soon as rooted. Do not allow subtropical plants to be cramped in small pots, and do not afford more heat than is necessary to secure progressive growth.

PLANT HOUSES.

Greenhouse.—Insert cuttings of *Salvia splendens* and *S. gesneriflora* in loam and sand, placing the pots in gentle heat, and shade the cuttings from bright sun. When rooted pot them off singly in 4-inch pots, keeping the plants in heat until established, when they may be removed to a cold pit. Cuttings of *Hydrangeas* may be inserted for next season's flowering, choosing suckers from the base of the plants, which if placed in gentle heat will soon root, when they should be shifted into 4-inch pots, and finally into 6 or 7-inch pots, planting the plants in a light position, it being important that the wood be well ripened. *H. hortensis* and *Thomas Hogg* are by far the best. Cuttings of *Solanum Capsicastrum* and *Pseudo-capsicum* now inserted in gentle heat will soon strike, and may then be shifted into 4-inch pots and keep growing freely in a genial temperature for a few weeks, after which gradually harden them off and plant them out of doors in a sheltered situation. Old plants should be cut in close, and at the end of the month may be turned out of the pots, have the balls reduced, and be planted out on a warm border about 18 inches apart. The plants so treated produce both flowers and berries early, many of the latter being coloured in the autumn when the plants are taken up for potting. *Campanula pyramidalis*, which with the white variety are fine for conservatory decoration, should be shifted into pots 8 to 12 inches in diameter according to the strength of the plants; loam with a fourth of leaf soil suits them well. As a useful plant for indoor decoration *Isoetes gracilis* has few equals and should be grown in quantity; it is readily increased. A moderate-sized plant may be divided into a score or more of pieces that in a season make very effective plants. *Farfugium grandis* divided and potted singly soon makes useful plants; and *Aspidistra lurida variegata* is one of the most enduring of plants for decoration, and succeeds with a moderate amount of root space; large plants may be divided into several pieces that soon attain to a useful size. *Petunias* of the double, especially the fringed varieties, now in small pots, should be given a shift, employing turfy loam with a fourth of leaf soil or well-decayed manure, and grown on in plenty of light will be very useful later in the season when flowers are not abundant. Cuttings of the early *Fuchsias* now inserted will make good plants for late flowering. *Kalosanthes* must have sufficient water to enable them to retain the lower leaves, as, however profuse the flowers, they will have an unsightly appearance. *Humea elegans* must not lack root room, for if allowed to become root-bound before shifting the plants usually die suddenly; when well grown this is one of the most elegant of conservatory plants. Cuttings of tree *Carnations* inserted strike readily in gentle heat, and if grown on will be useful for winter flowering. Roses in pots should be supplied with weak manure water, and the plants kept free from aphides by fumigation, syringing to keep down red spider. *Labonia* cuttings inserted in gentle heat, potted off when rooted and grown on, will make useful plants for winter flowering. *Bouvardias*, *Monochæstum ensiferum*, and *Linum trigynum* require to be grown in an intermediate temperature; cuttings now inserted will come in for winter flowering. Seed of *Balsam*, *Cockscomb*, and *Celosia pyramidalis* should now be sown. Free ventilation will be necessary to counteract the influence of the sun in raising the temperature too high, but avoid currents of cold air, employing fire heat only on cold nights to prevent the temperature falling below 40°.

Fumigate frequently. Shade will be necessary for plants in flower, but employ it only for such, as the more light plants get whilst growing the greater will be the subsequent result in vigour and profusion of flowers.

TRADE CATALOGUES RECEIVED.

W. Caudwell, Wantage.—*List of Polyanthuses*.
George White, Paisley.—*List of Florists' Flowers*.
Rawlings Brothers, Romford, Essex.—*Catalogue of Dahlias*.
W. & J. Birkenhead, Sale, near Manchester.—*Illustrated Catalogue of Ferns*.

TO CORRESPONDENTS.

* * All correspondence should be directed either to "The Editors" or to "The Publisher." Letters addressed to Mr. Johnson or Dr. Hogg often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense. Correspondents should not mix up on the same sheet questions relating to Gardening and those on Poultry and Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

BOOKS (C. B. W.).—You do not state whether you require a dictionary of plants or one of botanical terms.

SULPHURIC ACID (*Lieut.-Col. G.*).—It may be obtained in carboys from Messrs. Holder & Co., Paul's Wharf, 20, Upper Thames Street, London.

VINES NOT BREAKING (*J. P.*).—If we understand your question aright your Lady Downe's Vine is 2½ feet high with one terminal growth; if this is so allow the growth to extend freely, so as to form a strong cane.

SCALE ON CAMELLIAS (*Sandy*).—We do not think a strong solution of quassia chips applied to the stems would injure the plants. A solution of soft soap, about 3 oss. of soap to a gallon of water, mixing therewith a wine-glassful of paraffin, would be a useful application, so also would be nicotine soap, which is referred to in another column.

CHERRY TREE UNFRUITFUL (*A New Subscriber*).—As the tree produces blossom freely we can only account for no fruit following by inclement weather occurring, such as sharp frosts or excessive and continued rains during the flowering period. With more favourable weather we think the fruit will set. The Cherry crop has been a general failure during the past few years.

SALISBURIA ADIANTIFOLIA (*W. M. H.*).—Several handsome specimens of this ornamental tree are growing in many English gardens. There is a fine tree of *Paulownia imperialis* in Kensington Gardens which has frequently flowered freely. We cannot give you the other information you require. Write to Messrs. James Veitch & Sons, The Royal Nurseries, Chelsea, London.

SUMMER CLOUD (*E. C.*).—Those who manufacture special articles for sale are not accustomed to inform the public "how they are made," and we do not know how this article is made by Mr. H. Elliott of Maidenhead. If you purchase a canister you will obtain with it the requisite instructions for using the powder. It is of a pale bluish green colour.

GRAPE FOR MARKET PURPOSES (*Undecided*).—The Black Hamburg will answer your requirements of being "the most productive, easily managed, and needing little fire heat," better than any other. The "best prices" are obtained for late Grapes at this period of the year, but a long period of firing and much attention and skill are required to produce and keep them in good condition until the present time.

TRANSPLANTING ROSES (*F. J.*).—The Roses raised from cuttings must remain where they are until the autumn, when they may be taken up and planted a foot apart in rows 2 feet asunder, there to remain until they are large enough to be planted in their permanent positions for flowering. Shorten at once the terminal growths of the Apple trees to healthy wood buds as you suggest for insuring an extension of growth.

NURSERYMAN'S NEGLECT (*Mrs. S.*).—We are informed that the plants have been sent to you. Nurserymen have not always in stock every plant that is ordered, as some kinds sell out rapidly, and hence a little delay in the execution of orders is inevitable. Under these circumstances, however, the receipt of money should be promptly acknowledged, but some vendors do not undertake to acknowledge the receipt of small sums.

WEEDS ON LAWN (*H. B.*).—As the weeds have outgrown the grass to such a great extent as you describe, your only remedy is to dig up the lawn and thoroughly clean it by harrowing and raking out the weeds, and then sow the ground with lawn grass seeds. The present is a good time for doing this. On stating the size of the lawn and nature of the soil to a large vendor of such seeds, the proper quantity of a suitable lawn mixture will be sent to you.

CATERPILLARS ON VINES (*Jones*).—Your Vines are unfortunately infested with the Vine tortrix, *T. vitisana*. The moth is found on the Vines in early spring; head yellow, upper wings marbled with rusty and grey colours. The caterpillars appear often rolled up in the leaves as the blossom buds open, and do great damage, occasionally ruining the crops. The only remedy we can propose is a close and continuous search for the maggots, picking them off and destroying them. By following this course assiduously you may in time extirpate the pest.

SEEDLING ABUTILONS (*J. Clarke*).—The flowers sent are of excellent form and substance, and some appear distinct, particularly one that is very prettily veined with reddish pink on a lighter ground colour, and another of a dull orange tint veined with a brighter shade. Some of a pale orange yellow tint on the inner portion of the petals and deeper and brighter outwardly are also attractive. If the forms you have obtained possess the characteristic floriferousness of most good *Abutilons* they will be very useful owing to the neatness of the flowers.

RAMPIONS (G. H. M., Major General).—The soil ought to be moderately moist, but it must be light. A rich north border is a favourable situation. Sow during April and May in very shallow drills formed by pressing a rod edgewise in the ground, and cover with very fine soil. The drills may be about 8 inches apart, and the plants when large enough to be handled should be thinned to 4 inches apart. The soil throughout their growth must be kept moist by frequent waterings. Our Kitchen Garden Manual, post free for 4^{ths}, contains sound and concise information on all culinary crops.

INSECTS ON PLANTS (P. J.).—There are no insects on the *Pelargonium leaf* sent, but it bears undoubted evidence that there are or have been insects in considerable numbers either on other leaves of the same plant or on some other plant above it. Have you any climbers? If not, examine all the plants on the stage. However, if you pursue the course you have adopted of frequently fumigating with tobacco paper and syringing regularly the insects will disappear. The night temperature of 42° is too low for Vines that have grown so much as to need stopping; with a temperature of 10° higher the shoots will not decay if the Vines are in good condition and are otherwise well managed.

VIOLETS TURNING WHITE (F. M. S.).—It is generally due to indifferent culture, the plants being allowed to grow into a mass instead of being transplanted, as they should be, every year, or at least every other season. Plant rooted runners or suckers in good deeply dug well-manured ground any time this month, allowing the plants a foot distance apart every way, keeping off all runners during the summer, and the ground free of weeds. *Victoria Regina* and *Elegantissima* are the best single Violets, and *De Parme* of the double or Neapolitan Violets. Mix plenty of charred refuse or charcoal with the soil. It will greatly assist the flowers to retain their colour. The Russian and other small growers may be planted a somewhat less distance apart.

CUCUMBER LEAVES SCORCHED (A. R.).—The leaf sent was much crushed, but it bears clear indications of scorching. Very probably that on some sunny morning ventilation was delayed an hour too long. As the roots are healthy and most of the foliage in good condition we should remove the leaves that are injured the most, and by encouraging the plants with top-dressings of fresh soil as the roots appear on the surface, and watering them if needful with clear soft water occasionally, ventilating with care, and especially early in the morning, your Cucumbers we think will attain to a healthy and free-bearing state. If the soil is light we should top-dress with a heavier compost, and the plants will be the less liable to be scorched.

PEAR TREES IN VINERY (J. M.).—The trees which have set fruit so freely will mature a crop provided that crop is not too heavy, and they have the necessary support with the light and air that are essential for healthy growth. The fruit should be thinned and the trees removed to a house somewhat cooler and unshaded; or if this is not possible, place them in the lightest and coolest position in the vinery until the weather is sufficiently genial to permit of their being plunged in an outside border. Careful attention and good culture will be required to ripen the crop; rich surface dressings and occasional applications of liquid manure will be needed as the season advances and the fruit swells. The caterpillars would in all probability have appeared had the trees been left in the garden.

HYACINTHS NOT ROOTING (A. R.).—The bulb appears quite sound and healthy, and we cannot account for the non-production of roots except on the supposition that the soil contained something inimical to root-production, or to its having teen too dry. Those who grow the finest exhibition Hyacinths do not bury them under glass but in the open air, the pots being covered 5 or 6 inches deep with cocoa-nut fibre refuse, and thus the rains and snows of winter keep this covering very moist and also the soil in which the bulbs are potted. The past winter was a very dry one, and to this circumstance some of the best growers attribute the weak growth and comparatively few roots of many plants. Your Hyacinths by being protected with glass must have been kept still drier than those referred to, and if the soil was too dry when the bulbs were potted they could not produce roots freely, and some would probably produce none at all.

SELF AND ALPINE AURICULAS (Auriculata).—Self has pure white centres which are in a greater or less degree mealy, and one firm, distinct, unshaded colour outside. The foliage of some varieties are very mealy, others having only a faint dusting of farina. Pure Alpines have no trace of meal on either flowers or foliage. The most prized varieties have rich yellow centres and maroon-shaded edges, but many varieties have cream-coloured centres and purple-shaded edges, and a few flowers are not shaded. Some of these, however, are very slightly mealy, and therefore cannot be considered as pure Alpines. You will find both our "Florists' Flowers" manual, post free 7^{ds}, and Mr. Douglas's book, recently advertised in our columns, very useful. The latter can be had from the author at Loxford Hall, Ilford, for 3s. 9d., if it is not out of print.

ACACIA ARMATA (S. M. C.).—Cut-in irregularities of growth after flowering, and give the plants a moderate shift, employing equal parts of light turfy loam and peat, adding thereto a little leaf soil and sharp sand; pot firmly, and keep the plants in a light greenhouse or frame until the weather is sufficiently mild for placing them out of doors. They may be cut-in more closely if you desire it, but in this case they must be kept rather warm and close for a time to encourage fresh growth, syringing them regularly, and repotting when the growths are an inch long, and afterwards shading slightly, but not more than is necessary to prevent the young growths flagging.

FUCHSIAS FAILING (Idem).—Without knowing the mode of culture you adopt, whether your plants are old or young, whether they have been repotted or not, and the temperature of your house, it is impossible to answer your question. Our "Greenhouse Manual" contains instructions on the cultivation of Fuchsias and numerous other greenhouse plants, and you would find it very useful. It can be had by post in return for 10d. in postage stamps.

DISBUDDING VINES (J. E.).—The fruit-bearing laterals should not be nearer than a foot apart even if the rods are 4 feet asunder; if the rods are closer than this the laterals should be from 18 to 18 inches apart, so as to afford space for the ample development of the foliage. Rub off the weakest growths at once leaving a choice of two of the best on each spur until they show the bunches. If these are equal in prospective fruitfulness reserve the one nearest to the rod, provided—and this is important—it is growing in the right direction, so that it can in due time be secured to the wire without danger of breaking. Stop the growths at one, two, or three leaves beyond the bunches according as there is room for the leaves to expand freely and so to be exposed to the direct action of the light. Overcrowding and over-

pinching are both evils to be avoided, but there is perhaps more injury caused by the former than the latter. Disbudding will not induce any bleeding to cause injury.

SILVER SAND (Idem).—The "virtue" of silver sand consists in its sharpness, cleanliness, and purity. Both road and river sand when well washed are useful for propagating and potting purposes, so also is sand left by the sea and exposed for some years. We have not had experience with fresh sea sand, but we think if it were thoroughly stirred in clear water and the water poured off, repeating the process until the water poured off is as clear as when put in the vessel, the sand when dried would be safe for use, and would answer the required purpose. If those who have proved that fresh sea sand thus washed is deleterious they will oblige us by communicating their experience.

PROPAGATING MISTLETOE (Tyro).—The best months for sowing it are February and March. Make two cuts in the shape of the letter V on the branch of an Apple tree. Make the cuts quite down to the wood of the branch; raise the tongue of bark made by the cuts, but not so as to break it, and put underneath one or two seeds freshly squeezed from the Mistletoe berry. Let the tongue bark into its place, and the process is completed. If the seed is good the seedlings soon appear. Open the bark underneath the branch to receive the seed, because it is thus preserved from an accumulation of rain water and is shaded from the sun. The Mistletoe may also be propagated by grafts. Make an incision in the bark of the tree, and insert into it a thin slice of Mistletoe, having a bud and one leaf at the end. Grafts larger than half an inch in diameter require a notch to be cut out of the branch, the incision to receive the scion being made below this notch, and a shoulder left on the scion to rest on the notch, as in crown grafting. We do not know where seeds or grafts are to be obtained. The heads of Brocoli intended for seed must not be cut.

POLYANTHUS PRINCE OF ORANGE (S. D.).—Mr. Candwell of Wantage Berks, informs us that he can supply you with this variety if required.

UNCOVERING VINE BORDERS (Subscriber).—Great care is requisite in removing the covering, especially if the roots are near the surface. As you think the border is too cold the best plan would be to remove the west covering, but to reserve the long litter and spread it on the border at night, removing it on the mornings of fine days. The labour involved would be very slight, and you would have the satisfaction of knowing that the heat absorbed by the soil during the day did not escape by radiation at night, as it would do were the border exposed to cold winds or sharp spring frosts. The stems of the Vines must be wrapped with haybands, as if exposed to frost when the sap is active there is much danger of injury occurring.

NAMES OF PLANTS (A. M.).—*Orobis vernus*. (*J. Dehner*).—The Fern is *Asplenium viviparum*. The other plant is *Imantophyllum miniatum*. (*Cattleya*).—1, Apparently *Cattleya chocoensis*; 2, *Cattleya Trianae* (?) Both flowers very much crushed. The Fern is *Pteris crenata*.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

DEEP AND SPRING DRAINING.

(Continued from page 265.)

HAVING previously alluded to the draining of various soils we propose next to refer to that of peat or peaty subsoil. These may be justly styled the most difficult of all to be permanently and effectively drained, for it often happens that although the tiles or pipes may be properly placed as regards depth and position, there is a difficulty in keeping the drains open owing to the accumulation of ferruginous matters. This question of draining peaty soils successfully is of more than ordinary consequence, seeing that so large a portion of the pasture and grazing land of different counties, and particularly of the southern and south-western dairy districts, is found resting on this kind of subsoil, especially in vales where the pastures are irrigated. Certainly where irrigation has been properly carried out for some generations the meadows having peat for the subsoil are found to be some of the most productive and best adapted for dairy farming of any to be found in the kingdom. Although they will not often render a bullock fit for the butcher, yet the grass is always fit for dairy cows and is always plentiful, although the herbage—except under superior management—is often rather coarse, but is never injured by the hottest and driest summers. Wherever the peat has been laid dry by draining it receives especial benefit by irrigation at all times of the year, and a long course of watering such meadows has deposited a considerable depth of soil upon the peat, and after it has become dry and free from land and subsoil springs it forms one of the best bottoms to meadow land.

We must first call the attention of the home farmer, if he has to do with peaty soils, to the fact that the most important point is to lay them perfectly dry by draining, for this kind of soil is usually made too wet in two different ways—first, by springs arising at their connections with other soils, and next by bird's-eye springs generally fed by quicksands. Where the peat is connected with the higher lands, such as gravelly and sandy soils, cut a deep drain

at the foot of the hill deep enough to sever the veins of soil which conduct the water to the peat in the low lands. To decide the depth which the drain ought to be made holes should be sunk in the soil to find at what depth the water passes in the subsoil from the high to the low land peat. Having ascertained this point it will also be necessary to examine the state and condition of the water, as to whether it is pure or tainted with iron, which is shown by the red deposit, and the work must be effected accordingly. If the water is pure it is only necessary to lay the pipes at such a depth as will entirely cut off the water and prevent its passing on into the peat soil. If, however, there should be quicksands, which is often the case, the pipes or tiles must be used in such a way as best adapted to prevent stoppages by the accumulation of sand in them. This matter has been previously referred to. If, however, the water exhibits a red colour there will certainly occur deposits more or less of ferruginous matters in the drains, and the consequence of their accumulation is very disastrous. In the case of upright or quicksand springs arising in the peat equal care and precautions are necessary, both for the drain which is to cut off water from the peat and that which is intended to take it away from particular spots where it rises in the beds of peat.

Upon an analysis of this ferruginous matter to which we have alluded, made in 1846 by a Mr. R. Phillips of the Geological Museum in London, we find that this red pasty and soapy substance is exceedingly glutinous and adhesive, and contains silica and alumina with a trace of lime, 49.2; peroxide of iron, 27.8; organic matter (vegetable fibre) 23.0=100.0. The large amount of peroxide of iron shown in the above analysis appears to be in consequence of the iron existing originally in a lower state of oxidation, in which state it has been dissolved by carbonic acid and formed by the decay of organic matter in the soil, and then carried away by the drainage water. It thus appears from the analysis that only 27.8 per cent. of the deposit consisted of iron, and that the remainder—nearly three-fourths of the whole—consisted of foreign matter. In the peat soils we not only find large trees in a partial state of decay but also bog-ore, called by different names in different districts. This occurs in masses both large and small, and sometimes in beds. We also once came across a vein or stratum about a foot deep composed of clean pure hazel nuts unmixd with leaves or soil or other foreign substances. This was found at about 11 feet from the surface. On opening some of these nuts the shells were as hard as ever, but the inside was full of water; in fact, a great variety of vegetable matters in decay forms the basis of peat soil. From this conglomerate of organic matter flows a light flocculent mass which settles in the drains when the water is quiet, and is easily brought to rest by stones, grasses, &c., and this has given rise to a notion entertained by some people that it is a vegetable substance which actually grows in the drains.

What we have said accounts for the accumulation of these ferruginous substances at the inner part of the drains where there is a reduced force of water, but near the outfalls where the water is concentrated within the tiles it runs quickly and carries with it these flocculent and adhesive matters. Now these facts at once show us the correct principle which ought to be adopted in draining the peat soils and bogs, for it is clear that we must not only prevent these ferruginous matters from entering the tiles as much as possible, but that we must also adopt the use of such materials as have a smooth and glazed surface in order to prevent accumulation. We many years ago employed the ordinary horse-shoe or arch tiles with a flat tile of the same burnt clay materials. If, however, we had to do the work again we should certainly use slates for the bottom of the conduit or pipes glazed inside like sewage pipes. Pipes with collars are frequently used, also two pipes, one enclosed and encased by a larger pipe, and if the joints of these are reversed no doubt it would answer the purpose to a certain extent. Our great difficulty, however, to be overcome consists in providing a conduit to which these obstructive matters cannot adhere. It has, however, always been our plan to use clay or strong loam pressed close round and upon the tiles in order to keep out these prejudicial matters, but it has only partially succeeded even when done with the greatest care. All the draining done upon the peaty soils on our property was effected many years ago, and we have upon some occasions been obliged to take up the tiles and remove the obstructions caused by the accumulations of these iron deposits, and in some cases these have been found to be as hard almost as stone, caused no doubt by the large portion of iron contained in the compound. For a number of years, however, we have not been obliged to take up and repair those portions of the drains as formerly, having adopted the plan of scouring the drains by iron rods with a swab at the end. When we use iron rods which screw one into the other we can work the swab for a long way up the drains, but this is necessary to be done twice a year—at spring and fall; and since we have adopted this plan we have saved the cost of repairs, and the draining has been effective both upon arable and pasture land. Upon some of our meadow land not under irrigation we had a deep drain cut to intercept the water at the foot of the hill, but in some parts it has not done so entirely, no doubt the water passing at a lower level than the drain, and also some rising from quicksands. In such

cases we have examined the surface trenches, and where they exhibited the red and iron-tinged water we have pipe-drained these at a varying depth so as to obtain a quick run at the outfall; but none of these drills operate long together in a proper way without being scoured by rods, &c., as above stated. Still those drains which passed the most water in the quickest time kept open best, and some have not required extra attention for a considerable period. We must conclude our subject with a recommendation to the home farmer to have plans of the draining made with the depth and distance apart of the drains given, and thus enable him more easily to effect repairs in the future.

WORK ON THE HOME FARM.

Horse Labour.—Whilst we are writing the weather is extremely dry and harsh for the land; in consequence we advise the home farmer that as fast as any ploughing is done that it should be worked down and kept fine in order to retain the moisture. Whether the land is ploughed and intended to be sown with Lent corn, or whether it is intended as a fallow or preparation for mangolds or other root crops, it is alike desirable to have a fine surface; the Lent corn will then germinate with regularity immediately it is sown, and the land intended for roots will be ready at any time for either further tillage or seeding. We have always found this method successful whether the season proved wet or dry; besides, if the seeds of root crops do not germinate immediately it will be found that the weeds will prove extremely troublesome if they are allowed to start in advance of the young root plants. We have been over many fields of wheat lately in which the young plants have been much injured by slugs; this, however, applies more particularly to the wheat sown out of clover ley. We therefore recommend the home farmer before rolling the land to strew over the field broadcast from 6 to 8 cwt. of soot, as this will annoy and disturb the slugs and prevent them from doing so much damage to the wheat plants, and the chain harrow should be employed immediately after, going over the land twice, the roller following. We find on examining the surface of the wheat land numerous small holes like worm holes, in these the slugs secrete themselves; the chain harrow would therefore fill in these with soot and earth, and the roller following would at any rate upset the working of the slugs for some little time, and give time for the wheat plants to recover. The soot is also valuable as a manure as well as being distasteful to the slugs, for when pure and unadulterated it contains from 6 to 6 per cent. of ammonia, it therefore pays as a dressing in two ways. It is, however, frequently much adulterated, and it is somewhat difficult to obtain it pure; for there are various substances added, such as brickdust, sand, ashes and sawdust, to make it heavy and reduce the value; care must therefore be exercised in the purchase of soot. It is now the latest time at which the seeds of roots for planting out can be sown; strictly speaking it should have been done during March. Swede seed will do well even now if drilled at 15 inches apart in beds for planting out, and which often answers very well, and are much safer of a dry season than those seeded in the field. This is rather a novel plan. We happened to name it to a young farmer a few days ago, and he said he never heard of this mode of growing Swedes before. We drill the seed in April, and pulled the plants and set them out in July, thus saving a month in which the land may still be cultivated, or the plants may be set after vetches or other green crops. Our plan is to lay the plants along the land side of the furrow, and turn a furrow over upon the roots of the plants; they are all the better for being long and strong in the stems, for they may then be buried deep under furrow. The only care required is that a man should follow the plough, and with a hoe to push up a little soil over any plants which may not have been sufficiently covered. In this way we have grown in the driest of summers very heavy crops of Swedes, whilst those sown in the field in the ordinary way would be a complete or partial failure according to circumstances. Roots grown in this way bulb almost entirely underground, and the stems would be long and coarse, but the bulbs would be large and the crop of heavy weight. We can therefore recommend this system to the home farmer if his land is foul and requires more time for tillage, or in case a crop of Swedes is required after a green crop; but to be prepared he should drill his Swede seed for planting out in the same way that he would prepare and seed the beds for producing cabbage plants.

Hand Labour.—There are but few farms that are free from couch grass this season, therefore the men and women will be employed in couching, or if paring and burning is being done they will also be employed in that work. The women will be employed in weeding. If the weather should prevent out-of-doors work some women may be employed in preparing carrot seed by hand-rubbing it with harvest gloves until it is free from the burr; the seed then will drill as freely as turnip seed, and we have always found this a much better plan than mixing the seed with ashes or manure for drilling. Some women will be required in planting potatoes, also in setting out Champion cabbage plants. The shepherds in the midland counties will now be busy with the lambing season, and we must remind them and the home farmer also that nearly all the complaints to which the young lambs are

liable originate with the dam. Whenever a lamb seems going wrong examine the mother immediately, and take notice of the udder to see whether there is too much milk, or too little, for in either case it is sure to affect the lamb injuriously. The young cattle, too, especially those intended for "baby beef" and fed under cover, must not only be liberally fed with roots and the best of cake, and bean or barley meal, and hay or sweet straw, but it is a matter of the greatest importance how the food is given. We have heard of a case lately where seven steers about eleven months old were kept in a large barn mow, and ought certainly with such quarters to have done well; several of them have, however, died suddenly, their food lately having been 5 lbs. per day at two meals, two-thirds decorated cotton cake, and one-third bruised oats and bran with hay. In our experience this food with a fair portion of roots ought to improve the animals fast; but then we are not told how the food was given, because if the steers were all loose in the barn and not fed separately, and the cake, &c., given either with chaff or by itself, some of them may eat the lion's share and be injured in that way, whereas in our mode of feeding, the cake and meal being mixed with cut roots, every animal would have its share of both and make good proof.

THE LATE MR. EDWARD HEWITT.

PERMIT me to lay a wreath on Edward Hewitt's grave. I had known him for many years, and when I read the notice of his death on page 266 the past came vividly before me, and I am not ashamed to own my eyes were somewhat dimmed.

My first knowledge of Edward Hewitt was from that grand old poultry book by Johnson and Wingfield, the first of the series of high class and highly illustrated works on poultry. I then used to read his notes and reports on fowls, &c., in "our Journal." I soon recognised him as the first man on the subject, and I have always noticed that no man can be the most distinguished man in any line of life down to the humblest without there being a great deal in him. To be A1 in anything a man must be an A1 himself. Time rolled on, and I took to going far and near to visit poultry shows. Those were pleasant days. At the Birmingham Show of 1865 I noticed a man with a very intelligent face going from pen to pen. His dress and appearance were as follows:—Rather broad-brimmed high hat, white necktie of the deep old-fashioned make, black satin waistcoat, black frock coat, and black trousers. I took him for an upper-class dissenting minister. His height was almost commanding, and his shoulders were broad. He was of dark complexion; he had heavy bushy eyebrows mobile and expressive, grey whiskers, and thin iron-grey hair. Altogether a man to look twice at and to ask, "Who is he?" I said I took him for a dissenting minister, as the waistcoat was open and not quite church-clergyman-like either in cut or material.

I watched him long, and then said to a man near me who was, I learned from his talk with another, a Birmingham man, "Who is that dissenting minister?" I was answered by a hearty laugh. "Dissenting minister! why that's Hewitt the poultry judge; but, well, he does look as if he were dressed up and ready to hold forth, certainly." I introduced myself to Mr. Hewitt as "WILTSHIRE RECTOR," and was most cordially received. Afterwards we met frequently, and I believe took to each other. I was present at the Crystal Palace Show when he had his accident, and the last time I saw him was also at that place, and we had breakfasted together by accident at the Westminster Palace Hotel. I think this was nearly eighteen months ago. He was then lively and looked well. Very amusing was he, and much he talked about poultry matters of former years. Those large grey eyes and heavy, bushy, mobile eyebrows and expressive mouth were all in full activity and apparent vigour. He spoke of being "quite well; yes, quite well again now." I little thought that was the last time I should see him. Once a terrible affliction came upon him, and he wrote to me in agony to ask my opinion, which I gave, and which appears to have given his mind much comfort. Of this I was unfeignedly glad.

Perhaps after the sad event I refer to he was never quite his former self in spirits, save just at times and for a short time. He was a thoughtful, earnest, good man, and the older poultry exhibitors and fanciers will miss and regret his well-known face and form. Fast indeed are the fanciers of the earlier, and shall I not add better, days of poultry showing, disappearing from us either by retirement or death, and the younger fanciers in their turn growing middle-aged. We are never likely to see again a Mr. Hewitt, for the times do not allow of his repetition. He began with and in a great degree moulded the fancy. His keen eye saw what ought to be regarded as "points" and what ought not. He became in time the judge, and from his verdict no one thought of ever appealing. Other judges naturally looked up to him with the question, "What does Mr. Hewitt say?"

There is always a fascination about the rise and progress of any movement, or pursuit, or fancy, and after a time this fascination dies away; and as greater praise is due to him who makes a road than he who mends it, so greater praise is due to the first great poultry judge than any succeeding one. It was also a great point in Mr. Hewitt's favour that he made many friends and was always

spoken of by all with respect. So long as poultry and poultry literature remain, so long, and that will be always, will remain the memory of the greatest of poultry judges—Edward Hewitt—WILTSHIRE RECTOR.

ARTIFICIAL INCUBATION.

WE were writing lately on artificial incubation. We have since then had considerable success with an incubator that had hitherto not given any satisfactory results, and this in spite of the dry winds which have prevailed. We are persuaded that our success has chiefly resulted from two causes, as they have been the only conditions changed since the time of our partial failure. It may be worth while to mention them:—

- 1, Raising the temperature to about 106° instead of about 103°.
- 2, What we believe is of the utmost importance—viz., keeping the egg-drawer extremely moist.

This we have done by putting a flower saucer in the centre of it with a large sponge therein, and twice a day supplying it with water. The drawer in consequence has been constantly in a state of steam; the hatching of the chicks reveals that the skin-like membranes are in their natural state, and not, as before, so dry and tough as to prevent the hatching of the birds.—C.

HATCHING PIGEONS.

PIGEONS should now be hatching. It is frequently necessary to transfer valuable young birds or eggs from one pair to another. Ignorance of the habits of Pigeons frequently causes these transfers to lead to disaster. It may be well to remind beginners that Pigeons feed their young for their first few days on a secretion from the crop, which is only produced after a certain time of incubation. The hatching of eggs under a bird will hasten it by a few days, and Pigeons will generally continue to sit three or four days over their time. The Pigeon sits seventeen or eighteen days from the laying of the second egg; if their eggs are to be transferred they must be given to birds whose date of hatching does not differ more than three days. Young birds should never be moved to birds which hatched their own young sooner than those that are given them were hatched; the food supplied to them would be too coarse. They may be safely given to birds which have hatched later by many days, or frequently when not large to birds the eggs of which are nearly due to hatch. A few extra days of feeding on pappy food often appears of much benefit to weakly squeakers.—FANCIER.

VARIETIES.

THE BATH AND WEST OF ENGLAND SOCIETY.—We begin to receive schedules of the forthcoming summer poultry shows. Foremost of that of the above Society, which is fixed to take place at Worcester on June the 2nd to the 7th. The Show will this year open on a Wednesday instead of on a Monday as heretofore—a gain to poultry fanciers, as their birds will be judged and seen the day after their arrival, and will not have an intervening day in which they often get their plumage soiled. The classes seem much as usual, and the prizes; but the cups, which have of late years been reduced in number, have this year disappeared from the list. We observe that in our copy of the schedule a pen has been run through the old rule against the use of divided baskets; we therefore hope it is abolished. The Secretary of the Show is Mr. Josiah Goodwin, 4, Terrace Walk, Bath. The entries close on May 5th.

HANTS AND BERKS AGRICULTURAL SOCIETY.—We have also received the schedule for poultry of this Society, which this year holds its Show at Portsmouth on June 22nd to the 25th. As the highest prizes for poultry are £1, and for Pigeons 10s., the Society can hardly expect to attract many exhibitors. Societies which cannot afford to offer better prizes than these would do well to make their exhibitions local.

POULTRY MANURE.—A very interesting analysis of poultry manure has been made by the eminent analyst Dr. Augustus Voelcker. The samples were from the yards of Mr. O. E. Creswell. Dr. Voelcker's opinion is that the value of the manure is about £4 4s. per ton.

WE understand that Spratts' Patent, the manufacturers of the celebrated Patent Meat Fibrine Dog Cakes, have been awarded a gold medal for their exhibits at the Sydney International Exhibition.

THE REPAIR OF MAIN ROADS.—A very useful pamphlet on this subject by Mr. W. H. Wheeler, C.E., surveyor of roads in Lincolnshire, is now being published by Messrs. Spon of Charing Cross, and Mr. Barwick of Boston. The work embodies the experience of a skilled surveyor, and its teachings may with advantage be turned to account, not only by parochial authorities but by many noblemen and gentlemen in the management of the roads on their estates. Information on the formation, keeping, and repairing of roads, on materials and the best time and mode

of their application, and on the labour and cost of maintaining roads in good order, are clearly and concisely given. Many practical hints of much value are embodied in the pamphlet, which if carried out would result in better roads at a less cost than prevail at present in many town and country districts. We recommend all who are interested in the important subject of which it treats to study attentively Mr. Wheeler's very suggestive and practical brochure.

METAL RUNNERS FOR FRAME HIVES.

IN your impression of the 1st inst. Mr. Cheshire, in an article on this subject, claims to be the inventor of the frame bar with projections on opposite ends, commonly known as mine, and he further says that I made it from his drawing. This latter statement I emphatically deny, and I beg of you to give this my denial the publicity you have accorded to his assertion. His opinions on the merits or demerits of the frame itself may go for what they are worth, as bee-keepers will judge for themselves on those points, but his implied charge of plagiarism is utterly unfounded, and I trust you will in justice to me insert this repudiation.—C. N. ABBOTT.

COTTAGE BEE-KEEPING.—No. 5.

ONE word more about swarming. It is most important that swarms should be as strong as possible. If they happen to issue, as is often the case, two or three swarms in the same day, it would be better to unite two or more of them together, certainly the weakest. The union is easily effected as follows:—First hive each swarm in separate skeps; this done, and when the bees are quiet, dash them out together in a heap on the ground by a smart blow on each hive. Set near them the hive which they are to occupy for them to creep into it, and as soon as settled put them in place of one of the old hives out of which either of the swarms issued. If by chance there should be any signs of quarrelling sprinkle the mass of struggling bees with a little sugared water or thin syrup. If only one weak swarm has to be dealt with, it were better to return it at once to the hive out of which it came. Do this as soon as possible after you have caught it. A simple plan is to spread a cloth on the ground in front of the old hive; dash the bees out upon it, and if you see the queen catch and destroy her. In a few moments they will all have returned to the old hive. In this case another swarm must be expected, but probably not for a day or two, and it will be much stronger.

While I am writing about uniting bees I may as well give instructions for effecting autumn unions of stocks, if any cottagers are to be found willing to learn and to practise all good management of their bees. I said before (page 209), that there will be several hives every year to plunder when the full number of stocks has been reached which the country can profitably maintain. What is to be done with the bees of those hives to be plundered? Nine hundred and ninety-nine out of every thousand such hives are set over a brimstone pit and the bees smothered in the fumes of sulphur. I recommend this fact to the attention of the Society for Prevention of Cruelty to Animals. There is plenty of scope for vigorous action on its part here. It is shocking to think of this awful waste of most valuable life; for only save these lives in August and September and join them to the population of your other hives which are reserved for stock, and your hives will be all the stronger in the spring and pay you so much the more. One of the greatest difficulties which bee-keepers in England have to contend with is the difficulty of maintaining a strong population through the winter months. So many are the risks to which bees are subject, causing great mortality among them, that oftentimes hives which are fairly strong in autumn are found so thinly peopled at the end of winter that early breeding is out of the question, and for hives to be in fullest vigour the bees must breed early. It is, therefore, a suicidal act of cruelty for a bee-keeper to destroy his bees. Nor is it a really difficult matter to save them. They can easily be driven out of their hives.

The following instructions will suffice:—First blow a few whiffs of tobacco smoke or any kind of smoke, say of brown paper or fustian rags, into the entrance hole, then turn the skep topsy-turvy into a bucket to steady it. Next put an empty skep over it of the same size, tie a cloth round the middle so as to keep in the bees, drum away lightly but quickly with the hands against the sides of the lower hive. In a few minutes the bees in the full hive will begin to march up into the empty hive. As soon as the hum within has abated (in ten or fifteen minutes' time) lift off the upper hive, in which at top will be seen a great cluster of bees. Put it gently aside for a few minutes. Meanwhile remove the full hive. If any bees remain in it I suppose you must brimstone them. They have had their chance of life. Now attend to the saved bees, and join them to the hive which stood nearest before you meddled with them. Dash them out as above instructed close in front of the hive; only in this case they must be well sprinkled with syrup. It is better to do this in this case towards dark in the evening, and it is a good plan to put the hive to which they are to be joined very gently close to them on the ground with

its edge a little raised. The bees will then gradually crawl in, and towards morning you can put the hive back in its place. Sometimes there is a little fighting—the colder the night the less of it there will be; but very often there is no fighting at all. Of course the queens will settle between themselves which is to be the mother of the hive. Generally the weakest "goes to the wall." The whole can be done in almost less time than it has taken me to write about it, after "practice has made perfect."

It must be remembered that three-fourths of all bees saved at the end of August or beginning of September are young bees bred late in the summer, most of which will live, if no accident befall them, till the early spring. By saving them in this way you add from three to four thousand useful lives to the population of the hive you join them to, thus increasing the temperature of the hive, and so making it possible for the queen mother to fill with brood in February and March twice as many cells as she could otherwise do. The difference in the vigour of hives is sometimes scarcely to be believed, all owing to the strength in their population. Examine in March two hives side by side, one weak and the other strong in bees. In the strong hive you will find four or five combs more or less full of brood, say ten thousand young bees coming on; in the weak one you could only count a few hundreds in one or two combs. The difference of results in the two cases as the summer comes on is marvellous, and the worst is that it is very rare to find a weak hive grow into a strong one. Strength one year begets strength in the following year, and the contrary is true also.

If the hive to which you have joined those bees happen to be well supplied with food and heavy you may take no further trouble about their food supplies; but if you have any reason to doubt the fact it will be advisable for you to feed them during the first and second week in October.—B. & W.

MULTIPLICATION OF STOCKS.

"A SIX-YEARS SUBSCRIBER" wishes to know the best method of obtaining the largest number of stocks in one season. Our seasons in England are so short that a limit must be put to the work of multiplying numbers; for though it is easy to breed queens to any extent, and also to divide and subdivide swarms to the extent of ten or twenty sections from one hive in one season, it is not wise or safe to multiply so fast. The difficulty is with brood which cannot be fed and hatched by artificial means. Safety and success depend to a very great extent on the quantity of brood reared and hatched in every hive. Now let us see how four good strong stocks in April can be multiplied into sixteen good stocks by the end of August? This has to be done, let us suppose, whether the season be favourable or unfavourable, and it can be done in the worst of seasons by the careful and constant use of artificial means and feeding.

The four stocks which we wish to multiply fourfold are well covered and well fed. The hum of contentment and progress is heard night and day in them; the bees get no check or chill to discourage them, and therefore breeding goes on rapidly and extensively. The hives will be ready to swarm some time in May. Generally speaking, hives on becoming ready for swarming square the ends—bottom ends—of their combs, and fill them with brood to the last cells. Hives should not be swarmed till they are ready, and they should be swarmed as soon as they are ready. The state of ripeness for swarming is learned by observation and experience. Well, the four swarms obtained in May are placed into smaller hives than those generally used by advanced bee-keepers of every school. The smaller-sized hives are here suggested because the object is to multiply and get swarms from the first swarms before it is too late. The May swarms put into the smaller hives and well fed will be ready to swarm themselves in June, thus yielding four virgin swarms. Meanwhile the old or original hives have reared young queens and yielded second swarms each within three weeks from the time they yielded first swarms. In the first swarm hives that yield virgin swarms the same process of rearing young queens and preparing to send off second swarms go on, and within three weeks after the virgin swarms have been obtained second virgin swarms may be got from them. But it is not wise to take them; one swarm from each of the first swarms is enough, thus making sixteen hives from four—viz., eight swarms from the dowager hives, and four swarms (grandchildren) from the first swarms. In favourable seasons hives standing amid good pasture naturally multiply in this way; even the dowager or old hives have been known to send off a second course of two swarms. And what has been done naturally without artificial treatment can be done in bad seasons by artificial treatment.

The secret of success is to make every separate community a party of progress—a community bent on comb-building and brood-rearing, and this can be done by the administration of good syrup during unfavourable weather. Progress in brood-rearing and comb-building may go on till the end of September under such treatment. This system of multiplying stocks will answer well with every kind of hive; in fact it is a close imitation of nature, supplying the bees with food when it cannot be gathered from flowers, and gratifying their instincts for swarming to a full

extent. Stocks created thus are young, healthy and excellent and all of them have queens less than twelve months old, save the virgin swarms which carry and possess the oldest queens. The modes of artificial swarming will be explained in notes under the head of "Bee-Keeping Made Easy."—A. PATTIGREW.

SEASONABLE HINTS TO BEE-KEEPERS.

It is now too late for candy feeding unless water can be supplied in immediate proximity to it. The air is now so dry, and the necessity for moisture is now, in consequence of brood-rearing, so great, that it is better not to tempt the bees with dry food. Only very thin sugar syrup should be supplied, and that in some form of feeder that can be set over the frames. Pollen being scarce after the past cold wet year, there need be no hesitation in supplying all the bees well take of pea flour. This should be sprinkled on a handful of cut straw in a box or old straw skep and set near the hives. My bees have already (March 27th) taken about 10 lbs. of this flour. In every apiary there should also be a drinking trough. Any shallow vessel filled with moss or tea leaves and kept always soaking will do. A few drops of salicylic acid solution, a spoonful or two of sugar as a bait, and a pinch of salt are useful additions to the water. Hives with an excess of sealed food may, instead of receiving syrup, have a few inches of their combs unsealed by means of a sharp knife every day or two. When thus treated the bees remove all the honey from the damaged portions, and thus are compelled to use what might otherwise be at this season a hindrance to the prosperity of the hive.

Now is the season above all others when the population of the hives is being renewed. Those bees that have survived the winter are now so rapidly disappearing that, though breeding is going on to a considerable extent, there is yet no apparent increase of population. It is well, therefore, to continue the winter packing, the contracted brood nest, and the narrow entrance. In a few weeks, however, the number of bees will begin to increase to a visible extent, and to crowd the combs left in the hive. When this is the case the operation of spreading the brood may begin—that is, an empty spare comb or frame of foundation should be inserted right in the centre of the brood nest. This tempts the queen to increased energy in egg-laying, at least when supplies either natural or artificial are afforded. Great care must, however, be taken not to overdo this form of stimulus, else during cold weather the bees may draw together and leave portions of their brood exposed. As a rule a fresh comb should not be given till the bees are found crowding their apartment. Not until the whole of the brood apartment is filled with bees should the winter packing be entirely removed.

This is the best season for transferring the contents of straw skeps into bar-frame hives. The combs are tough, not overfull of honey, and there is comparatively little brood. After driving the bees the combs should be cut out and all that are suitable fitted into the frames, so as to fill as many as possible. I find raffia the best tying material. The whole operation should be performed in a warm room if possible, and the bees returned to their combs with as little delay as possible. Two stocks can be very readily joined by transferring both into one hive, and this is quite profitable when the stocks are not extra strong.

Bee-keepers with some experience may now pretty safely count their chickens so far as to be able to form an estimate of the number of stocks likely to require supers by-and-by, and also the number of new hives for purposes of increase. Every such appliance should now be prepared, so as to avoid bustle and confusion when the exciting season of supers and swarms arrives. The American style of sectional supers will be almost general this year, and bee-keepers would do well to get posted up in the best methods of working them. I have used sectional supers for four years, and am persuaded they will soon drive every other form of package out of the regular market. Their cost is extremely small—only about 1d. on the pound of honey they contain; and practically they need no making, as they can now be had in the flat, only requiring to be folded together to make a strong package. The so-called dovetailed sections seem to be going out of repute in America, and I have had so many mishaps from the joints giving way that I cannot recommend them unless they are either glued or nailed. The best section in my estimation is that recently invented by A. J. Root. It is all in one piece, the joints being formed by cutting a square, not V-shaped, groove across each folding corner. They are made of beautiful white basswood.

In regard to the selection of the kind of section to be used I would strongly urge bee-keepers to adopt and stick to a particular size. If several sizes are used, each necessitates its own particular frame or tray or packing crate, and thus different sized sections in an apiary become almost as troublesome as hives with different sized frames. For Woodbury hives, such as I use, I have adopted as my standard a section $\frac{5}{8}$ inches by $\frac{1}{2}$, four of which fill my regular frame, each containing $1\frac{1}{2}$ lb. of honey when filled. This size is also very convenient for use as a super proper. A careful watch should at this season be kept on all hives containing aged or badly raised queens. These are most likely to give way about this time. If the ground in front of each hive be coated with

sawdust or white sand, it is comparatively easy to discover the dead body of the queen should she have been cast out. In such cases, if the stock be a weak one it should be joined to another; otherwise it should have a comb of eggs from other hives once a week or so, care being taken to remove any young queen that may be reared previous to the appearance of drones in the neighbourhood. When drones are found flying it will be safe to allow such queens to remain. Since I first drew attention to the frequent loss of queens through defective legs I have observed several instances of the same, and had so many others reported to me that I am more than ever convinced of the frequency of such a cause of failure. At the same time I have a queen minus a foot in one hive doing remarkably well. Her defect does not seem to interfere with her power of balancing herself in the act of egg-laying, and as she is still young I shall leave her to run her course.—WILLIAM RAITT, *Blairgowrie*.

OUR LETTER BOX.

HATCHING SWANS' EGGS.—"J. B. P." would be obliged by anyone stating if they have hatched them under either a Turkey or a Goose.

MANAGEMENT OF FOWLS (A Student).—Some crossbred fowls lay equally well with the pure varieties. No one can answer your questions relative to the amount of food to supply. Some fowls, like horses and other animals, consume more food than others. Except during prolonged frost your fowls will probably find as much animal food in the form of insects and grubs as is good for them in the orchard and plantation. You will find much useful information in our "Poultry Manual," which you can have post free from this office if you enclose 6d. in postage stamps.

ARTIFICIAL INOUBATION (C. H.).—The failure of your birds to hatch may arise from the same cause as that stated by our correspondent "C." on page 286; if so, the remedy is also there suggested.

MOLES (S).—As they are numerous and increasing both in the pasture and arable land, you will err if you do not follow your bailiff's advice and let him trap them. We do not think he will catch them all.

FARMER'S ACCOUNT BOOK (Hallowesire).—There are several of these books published and all are good: we have used Warners' and find it very useful. It can be had by ordering it through any bookseller.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. $51^{\circ}23'40''$ N.; Long. $0^{\circ}8'0''$ W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.				
	Baromet. terric altitud.	Hygrom- eter.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature.		Rain.
		Dry.	Wet.			Max.	Min.	In sun.	On grass.	
1886.										
March										
April										
Sun. 28	30.364	36.0	54.2	E.	43.0	49.6	28.7	72.4	37.2	—
Mo. 29	30.072	35.7	53.7	E.	41.6	59.8	29.8	101.8	33.6	—
Tu. 30	30.006	47.2	44.1	N.E.	42.9	61.2	35.7	101.0	32.6	—
We. 31	29.8	51.4	46.4	W.	43.6	53.6	34.8	72.6	27.3	0.813
Th. 1	29.541	47.6	42.7	W.	43.7	55.0	40.0	118.8	37.3	0.141
Fri. 2	29.557	44.5	43.4	S.	43.9	52.3	39.4	61.3	33.7	0.220
Sat. 3	29.567	54.5	51.2	S.W.	44.2	61.5	44.3	112.4	39.8	0.010
Means.	29.802	45.1	42.2		43.3	56.1	35.7	91.5	31.6	0.681

REMARKS.

28th.—Calm, fair, cold day, slight sunshine; misty after 4.30 P.M.
29th.—Thick white fog in early morning and very cold, but very fine bright day with hot sunshine; little haze in evening.
30th.—Fair day throughout, bright sunshine, but slightly hazy at times.
31st.—Windy overcast morning; rain commenced 1 P.M., continued slightly during the day.
April 1st.—Fine morning, windy, heavy shower and hail at 1.45 P.M., showery until 3.30 P.M., very fine afterwards; clear, bright, starlight evening.
2nd.—Rain from 7 A.M. until 3 P.M., fair afterwards.
3rd.—Fine bright sunny morning; afternoon showery; fair evening.
Mean of barometer readings nearly 0.400 below last week, but all the thermometric means, except the sun maximum, a little higher than those of last week. Weather during the week unsettled, but reasonable for the time of year.—G. J. SYMONS.

COVENT GARDEN MARKET.—APRIL 7.

BUSINESS remains the same, the elections preventing any revival for the present. Some good samples of new Grapes are now reaching us, but prices are not high. Cucumbers are a complete drag.

VEGETABLES.

		s. d.	s. d.			s. d.	s. d.
Artichokes.....	dozen	2	0 to 4	Mushrooms	pottle	1	6 to 1
Asparagus.....	bundle	5	0	Mustard & Cress	punnet	0	2
Beans, Kidney ..	100	1	0	Onions.....	bundle	3	6
Beet, Red.....	dozen	1	0	Pickling.....	quart	0	0
Broccoli.....	dozen	0	1	Parsley.... doz.	bunches	6	0
Brussels Sprouts	1 sieve	0	0	Parsnips.....	dozen	1	0
Cabbage.....	dozen	1	0	Pea.....	quart	0	0
Carrots.....	bunch	0	4	Potatoes.....	bundle	3	4
Caulicums.....	100	1	0	Kidney.....	bundle	4	0
Cauliflowers.....	dozen	0	3	Radishes.... doz.	bunches	1	2
Celery.....	dozen	1	0	Rhubarb.....	bundle	0	4
Coleworts.... doz.	bunches	2	0	Salsafy.....	bundle	1	0
Cucumbers.....	each	0	6	Scorzoner.....	bundle	1	0
Endive.....	dozen	1	0	Seakale.....	basket	2	0
Fennel.....	bunch	0	0	Shallots.....	1 lb	0	0
Garlic.....	1 lb.	0	0	Spinach.....	bundle	3	0
Herbs.....	bunch	0	0	Turnips.....	bunch	4	0
Leeks.....	bunch	0	0	Vegetable Marrows	each	0	0

WEEKLY CALENDAR.

Day of Month	Day of Week	APRIL 15—21, 1880.	Average Temperature near London.			Sun Rises.	Sun Sets.	Moon Rises.	Moon Sets.	Moon's Age.	Clock after Sun.	Day of Year.
			Day.	Night.	Mean.							
15	TH	Royal Society at 8.30 P.M. Linnean Society at 8 P.M.	58.4	37.8	48.1	5 5	6 55	8 4	0 21	6	0 6	106
16	F		57.4	37.1	48.7	5 3	6 56	9 4	1 1	7	0 20	107
17	S	Horticultural Society Incorporated, 1809.	58.2	35.8	47.0	5 1	6 58	10 10	1 33	9	0 34	108
18	SUN		56.8	28.0	47.4	4 59	7 0	11 21	2 0	9	0 47	109
19	M	Nathaniel Wallich, M.D., died, 1854, æt. 68. Society of Arts at 8 P.M.	59.0	35.6	47.3	4 57	7 2	0 33	2 23	10	1 1	110
20	TU		60.3	35.1	47.7	4 55	7 3	1 48	2 42	11	1 14	111
21	W		59.5	37.3	48.3	4 52	7 5	3 5	2 58	12	1 26	112

From observations taken near London during forty-three years, the average day temperature of the week is 58.8°; and its night temperature 36.8°.

THE ELECTRIC LIGHT—A NEW GARDENERS' ASSISTANT.



IGHT and heat are prime factors in the production of growth and full development of the organs of all vegetable life. Both are given us in bountiful measure in summer, and only in summer; at other seasons of the year a free quick growth is only to be obtained by artificial means. Of such, artificial heating has long been an established fact, reduced to a science so simple that its application to practice is one of the first things taught in the study of horticulture. Artificial lighting as a means to the same end has not hitherto been achieved. It is to an attempt to do so that I have now to call attention.

At Sherwood Park, near Tunbridge Wells, Dr. Siemens had a conservatory attached to the house lit-up at night by an electric light, which was fixed near the roof under a reflector in the centre of the building. The flourishing condition of the plants thus subjected to the influence of its rays soon attracted attention, giving rise to an idea that a light of such intense brilliancy might be turned to account as a substitute for sunlight during the months of winter and early spring, to promote the growth of plants subjected to early forcing. This idea led to a series of experiments, the results of which have been so remarkable as to merit attention and thoughtful discussion.

A lamp having a large circular reflector above it was fixed in the open air between two ranges of low glass structures, and about 6 feet above the roofs. It was always lit at dusk, and for six hours each evening certain plants of Cucumbers, Melons, Mustard, and roots of Carrots and Swedes which had been potted specially for the experiment, were kept well within the circle of light, others potted at the same time and kept in the same temperature being kept away from the light for comparison. Next the light was tried inside the house, some plants being exposed to it at night and kept in a darkened chamber during the day; others kept under the light all night being left out in the daylight all day. This was continued for four days and nights. The lamp was next put inside a Palm house, and was used throughout each night for three weeks. It was next taken back to its original position in the open air between a Melon house and Strawberry pit, where I found it on the day of my visit, April 5th.

Now for results. None of these are sufficiently conclusive to enable anyone to speak positively as to the practical utility of the application of the electric light to horticulture. Some pots of Mustard and Carrots which for about a week had been in preparation for my visit by Mr. Buchanan, Dr. Siemens' very intelligent gardener, showed unmistakably an accelerated growth, a more robust habit, and a deeper shade of green from the effects of the electric light at night, in addition to full exposure to daylight, than other growths which had only the daylight and kept in darkness at night. The Melon and Strawberry plants were very robust, the growth vigorous, the foliage large and of that deep green hue which under ordinary circumstances unmistakably

betokens high culture, but was here attributed solely to the increased effect imparted by the sustained light. Thus much I saw, but it must not be forgotten that lengthening days and brighter skies render comparison much more difficult now than in January or February.

By the experiments then made it was found that the lighting at night induced not only an acceleration of growth but also a proportionate increase of vigour. There was no sickly or attenuated growth, but a free, vigorous, well-balanced action of all the functions, and not of one or two at the expense of others. It is also claimed that by its means there was a clear gain of a fortnight in the ripening of forced Strawberries. Two plants were selected for experiment by Mr. Walker of Dunorlan from his own stock. Mr. Walker corroborated all that was stated, and assured me he had watched the experiment closely, and there was no doubt of the result in that particular instance, nor of the beneficial influence of the electric light upon all plants upon which it had been tried.

I believe I am correct in stating that these experiments are not regarded as by any means conclusive, but as sufficiently successful to justify the undertaking of other and more extensive experiments, the aim being so to apply the light that its very considerable amount of heat may be turned to account for the exclusion of frost, and in some degree for the regular heating of the structure in which it is placed, and thus lessen the expense of its production. If ever it comes into general use, its chief value will undoubtedly be for early forcing.

Electricity as an aid in horticulture is so thoroughly in its infancy, that all statements concerning it must be cautious and guarded. There is apparently a little uncertainty as to the power of the light tried and its cost. Its power is said to be equal to that of from twelve to fourteen hundred candles, and the cost of gas, oil, and points from 2d. to 6d. per hour. To this must be added the cost of attendance to the engine. The engine in use at Sherwood Park is a gas engine of three and a half horse power, admirably adapted for the purpose, no time being lost in getting up steam. A turn of the fly wheel, a touch to two or three valves, a light to the gas, and the machinery is in full action. The generation of electricity is instantaneous and continuous; the positive currents rush to the negative through the conduction wires to the carbon points, and a light of intense brilliancy is the result. The machinery is sufficiently simple for comprehension by a person of ordinary intelligence; the bearings require oiling once in six hours, and fresh charcoal points have to be put into the lamp occasionally. So that the first cost of the engine and apparatus appear to be the most weighty consideration.

Next winter the experience and knowledge gained will enable the trials to be conducted with a greater degree of certainty and clearness of aim, and I hope to have an opportunity of noting the progress that has been made, and of recording evidence of the practical usefulness of this novel agent as an aid to horticulture. Mr. Buchanan is of opinion that he shall be able to produce and ripen a crop of Melons in winter by its assistance, and in trying to do so he will be also throwing some light upon the important question of

the power of the electric light to impart flavour to fruit.—
EDWARD LUCKHURST.

TOO-MUCH-ALIKE ROSES.

A SUGGESTIVE paper under this heading appeared in the "Rosarians' Year-Book" for 1879, and no one was better fitted than Mr. George Paul to write on such a subject. His extensive culture and his experience as a most successful exhibitor gave him very real advantages in taking up it, or indeed any subject connected with Rose culture. Still, as he himself indeed urges in the paper, he is but one; and there are many more, both among amateurs and nurserymen, who are well qualified to give their opinions on such a subject. In that paper he strongly appeals to the National Rose Society to take up such a subject, and by pronouncing authoritatively on it set the matter at rest. At some of the meetings of the Committee in this earlier part of this year and at the annual meeting the subject was brought up. Various opinions, as might be supposed, were expressed on the subject, but no conclusion could be arrived at; and it was ultimately agreed that the subject was not yet ripe for decision, but that I should endeavour to obtain the opinions of such of our leading exhibitors and growers as I could, and that after that perhaps some decision might be arrived at. Consequently I issued a circular to all our leading exhibitors containing the following questions.

1, What Roses you consider too much alike to be exhibited in the same stand?

2, Whether if so exhibited the stand should be disqualified; or if not, in what degree they should be considered as marking superiority to the other stands?

To this circular I have received a certain number of replies—about thirty in all, the greater number being from amateurs; nurserymen are, I presume, too busy. At the outset there appeared to be a difficulty in this wise: Would the same rule hold good in a stand of twelve or twenty-four and seventy-two? You might have three Roses, say, very much alike, distributed so in a stand of seventy-two that they would not appear to give a character of sameness to it, while in a smaller stand they would at once do so. However, I do not think that it will be possible to make any distinction of this nature; it would lead to interminable disputes and mistakes.

I will take, then, in the first place the list given by Mr. George Paul in the paper alluded to, and then add to it such other names as I find in the lists furnished me.

HYBRID PERPETUALS.

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| 1, Maurice Bernardin, Exposition de Brie, and Ferdinand de Lesseps. | 6, Maréchal Vaillant and Avocat Duvivier. |
| 2, Charles Lefebvre and Marguerite Brassac. | 7, Mons. Bonneuse and Baron de Bonstettin. |
| 3, Mdlle. Eugénie Verdier and Marie Finger. | 8, Louise Peyronny and Laella. |
| 4, Reine du Midi and Madame Alice Dureau. | 9, Mad. Clemence Joigneaux and La Souveraine. |
| 5, Madame Boutin and Christine Nilsson. | 10, Prince Camille de Rohan and La Rosière. |
| | 11, François Fontaine and Sénateur Favre. |

TEAS.

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| 12, Adam and President. | 16, Madame Denis and Madame Maurin. |
| 13, Alba Roses and Mad. Bravy. | 17, Niphotos and Mathilde. |
| 14, Belle de Bordeaux and Gloire de Bordeaux. | 18, Fortune's Yellow and Beauty of Glazenwood. |
| 15, Elise Sauvage et L'Enfant Trouvé. | |

GENERAL RETURNS.—HYBRID PERPETUALS.

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| 1, Mrs. Baker and Villaret de Joyeuse. | 16, Jules Margottin and Madame Louise Leveau. |
| 2, Baronne de Maynard and Boule de Neige. | 17, Comte de Nanteuil and Marquise de Ligneret. |
| 3, Madame Hunnebell and Mrs. Vetch. | 18, Camille de Rohan and Edouard Dufour. |
| 4, Mrs. Ballenden Kerr and Mdlle. Bonnaire. | 19, Pierre Notting and Velours Pourpré. |
| 5, Lord Beaconsfield (Bennett) and Leopold Premier. | 20, Madame C. Crapet and Madame Hugard. |
| 6, Duchesse de Caylus and Penelope Mayo. | 21, Prince Arthur and Triomphe de Caen. |
| 7, Princess Christian and Virgil. | 22, Reynolds Hole and Sultan of Zanzibar. |
| 8, Dupuy Jamin and Auguste Rigotard. | 23, Marguerite de St. Amand and Duchess of Edinburgh (Bennett). |
| 9, Antoine Ducher, Marie Louise Pernet, and Mad. Ed. Pynaert. | 24, Marie Baumann and Alfred Colomb. |
| 10, Sénateur Valise and Avocat Duvivier. | 25, Fisher Holmes and Duke of Wellington. |
| 11, La Reine and Alice Dureau. | 26, Comtesse d'Oxford and Hippolyte Jamin. |
| 12, President Thiers and Souvenir d'Adolphe Thiers. | 27, Black Prince and Pierre Notting. |
| 13, Sultan of Zanzibar and Duke of Edinburgh. | 28, Princess Mary of Cambridge and Marguerite de St. Amand. |
| 14, Madame C. Crapet and Beauty of Waltham. | 29, Fisher Holmes and Duke of Wellington. |

TEAS.

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| 1, Perle de Lyon and Perle des Jardins. | 4, Madame Trifle, Gloire de Dijon, and Madame Levet. |
| 2, Bougère and Clothilde. | 5, Alba Roses, Madame Sertot, and Josephine Malton. |
| 3, Devoniensis and Climbing Devoniensis. | 6, Niphotos and Mathilde. |

It would thus appear that there are in the opinion of some Rose-growers, besides the eighteen given by Mr. Paul, twenty-eight cases of duplicates amongst Hybrid Perpetuals, and five cases of Tea Roses; but we must take other means of arriving at the opinions of Rose-growers, and I think some of the cases in the foregoing list will astonish some people. It is not my province, however, to give my own opinion on this matter, but to collect those of others.

The judgments are very various. Thus one very distinguished amateur repudiates the idea of Roses which nearly every other rosarian considers identical as being so, and says that in his opinion there are only two Roses really identical—Devoniensis and Climbing Devoniensis. In twenty-one of the twenty-eight opinions which I have received Ferdinand de Lesseps, Maurice Bernardin, and Exposition de Brie are considered identical. The same account is given of Eugénie Verdier and Marie Finger, Alba Roses and Madame Bravy, nearly so Marguerite Brassac and Charles Lefebvre; but then in many of the cases only one vote is given, and then, again, many are Roses which never appear on an exhibition table.

As to suggestions in meeting the difficulty, some are for very heroic measures, and would immediately disqualify a stand where these duplicate Roses appeared; while there are others who would not only not disqualify, but not even consider a stand thus staged as inferior on that account. Our President suggests that the great Rose-growers should agree to bracket in their catalogues such Roses as they agreed upon to be too much alike; while Mr. Baker of Reigate would be sorry to see any of those Roses disqualified, and would leave the point of deciding as to the position of the different stands to the judges, who would, in estimating stands which ran one another very hard, take into account the greater variety and distinctness of the stands.

It will thus be seen that the subject is surrounded with difficulties, and probably most growers will be inclined to say with Lord Melbourne, "Can't you let things alone?"—D., Deal.

THE WEATHER AND THE CROPS.

THE very seasonable weather which so far we have experienced has already had a very encouraging effect upon both horticulturists and agriculturists. Crops of all kinds appear to be thriving, and, what is of primary importance, seeds of all kinds and Potatoes are got in in a very satisfactory manner, altogether different to what has been the case of late years. Small seeds are germinating better than was anticipated. The seed harvest of 1879 was unquestionably a very bad one, and in all probability a very great per-centage of the seeds sown this season were harvested in 1878. I do not protest against this—quite the reverse, as I find that these old seeds germinate much more freely than do the newer. Had we had a spring similar to that of last year we should, I think, have found both the old and new seeds germinate badly, coldness and excessive moisture being fatal to both, at least if the latter be badly ripened. For this reason in some localities where the soil is heavy and retentive and the seed has been sown at the usual time much of it has perished. I am afraid many cottagers have been supplied by local seedsmen with very old seed, as I hear many complaints about Onions, Lettuces, Radishes, and Peas "coming up" very badly.

Runners and Kidney Beans in particular will be found rather difficult to deal with, as I do not think there was much old seed left on the wholesale merchants' hands last season, and the new seed is very badly ripened. If not sown too soon plants may be secured on light soils; but where the soil is heavy I should suggest the advisability of sowing either singly in small pots or in light soil in boxes, hardening off before the plants become much drawn, and finally planting out in trenches or otherwise. Beans transplant readily, and Kidney Beans more especially are, I believe, improved by the operation. Those who sow in the open will do well to also sow in boxes of light soil in readiness for making up very probable blanks.

The choicer varieties of Peas are, as was anticipated, germinating badly. The worst with me in this respect so far is the variety Dr. Hogg. Peas transplant well, but the tap root is very easily broken, which materially affects the crop. Where

the rows are found to be uneven it is advisable, as soon as this is discovered, to at once sow a box of the same variety, using soil consisting principally of leaf mould, and placing a layer of crocks on the bottom to prevent the tap roots clinging to the wood. Water with very warm water in the first instance, and place either on a mild hotbed or near the hot-water pipes till the seed has germinated, when they should be put on shelves and near the glass if possible, gradually hardening and planting out when the first leaves are fairly developed. A little fine soil worked in with the rather tender roots will help to establish them, and if the planting is done carefully but few roots need be broken, as they turn out from the light soil in the box almost intact. The planting is done with a trowel, and the tap roots when unbroken are put in to their full length. They soon start into active growth, and although not quite so strong as those not transplanted, well repay the extra trouble taken. Patchy rows are very annoying, and should either be made up as advised above, or be hoed-up and resown.

A great per-centage of the autumn-sown Cabbages are running to seed in this district, owing, I believe, to their extreme weakness when planted. They were sown at the usual time, but made such poor progress that I for one regret not having left more in the seed beds till the spring, as those so left are now starting well in their fresh quarters. Cauliflowers were also very weak, but they were strengthened considerably before being put out, and are now growing freely.

The autumn-sown Spinach is very useful. The Round or Summer has proved quite as hardy as the Prickly or Winter; in fact, the breadth of the former is the best, but it was sown under more favourable circumstances.

The Brown Cos and Hicks' Hardy Green Cos have both survived the rigours of the past winter without protection. Birds have been their worst enemies.—W. IGGULDEN.

ASTERS.

It is to be feared that many people refrain from growing these beautiful annuals because they have not the means of raising them in pans in heated frames as is so commonly recommended, and it is certain that there are some who spoil their plants by too early sowing under the conditions named. There is no better mode of raising Asters than sowing the seed in soil specially prepared on a sheltered border in the open air. It may be sown any time during the present month or early in May. The soil should be very light and rich, and should consist of decayed vegetable refuse, leaf soil, wood ashes, and light loam. If this is spread 3 inches deep, and the seed is sown thinly either in drills or broadcast and covered an eighth of an inch with a portion of the same compost sifted, healthy sturdy plants will be produced superior to any that can be raised in heat. If the soil is naturally light and rich, such that will grow Radishes quickly and well, no other preparation will be needed for raising Asters. Thick sowing must especially be avoided. The plants should be sufficiently thin that they have room to grow large enough without crowding until they can be transplanted where they are intended to flower. If the seed bed, unless the soil is very moist, be well watered a few hours before the seed is sown, no further watering will be needed until after the seedlings appear, and then only during very dry weather. Asters may be raised in this manner as easily and with the same certainty as Cabbages or Onions, and if transplanted in rich soil will make fine plants that will produce grand flowers during the late summer and early autumn months.

Of the imbricated varieties none equal the Victoria Aster; the *Chrysanthemum*-flowered and Bouquet Asters are very dwarf and floriferous, while the variety named Perfection is a strong grower with large flowers; the Victoria, however, is the best of this section. The Quilled Globe Asters are very beautiful when well grown, and are worthy of special care.

For producing extra fine blooms for exhibition the plants should be grown in trenches prepared as if for Celery, and worked copiously during the summer occasionally with liquid manure; indeed they require precisely the same attention in this respect as Celery does, and will give the same reward for generous culture.—EXHIBITOR.

SPROUTING BROCCOLI.—I have read with much interest the articles that have appeared from time to time in the Journal on Broccoli, but have failed to notice that sprouting Broccoli has been mentioned. It has been invaluable to me during the two past trying winters, and for that reason I wish to say a

few words concerning it. I willingly admit it is not such a highly prized vegetable as heading Broccoli; still, when these are scarce it forms a good substitute, and I have found it much harder than any variety of heading Broccoli that has come under my notice. I give the preference to the white sprouting rather than the purple sprouting variety. Both last winter and this I have cut heads that were highly useful. Then the plants form a succession of sprouts, or small heads, that need not be despised. I am more fortunate than some gardeners, as I have a good supply of heading Broccoli still. The hardest that I have yet grown is Sutton's Late Queen, and a variety of Snow's Winter Broccoli from the same firm is very hardy, though I doubt if it is the true variety, as it is now only coming in. Osborn's and Veitch's Self-protecting were killed outright. I have scarcely lost one Green Curled and Cottagers' Kale, and have had a good supply of vegetables all through the winter. This year I have adopted the plan of sowing some in drills where they are to remain, which is no doubt a good plan if they can be protected from the ravages of slugs. I also find it best to allow them plenty of room from row to row when in their permanent quarters.—A. J. SANDERS.

NEWCASTLE SPRING FLOWER SHOW.

THE Botanical and Horticultural Society of Durham, Northumberland, and Newcastle-on-Tyne held their fourth spring Exhibition in the Town Hall and Corn Exchange, Newcastle-on-Tyne, on the 7th and 8th inst. There was a marked improvement in every department of the Show except in Azaleas, which were few in number and not up to the former standard of quality; but this slight drawback was amply compensated for by the superior productions in other classes. Auriculas especially were much in advance of last year both in number and variety, but the trusses were not large owing to the plants being yet small. To the culture of these flowers and Polyanthus special encouragement is given, some admirers of them having specially contributed towards the prize fund, which enabled the Society to offer £25 in prizes, which brought out a spirited competition, which certainly was a distinguished feature of the Show. The Hyacinths were splendid, and were numerously represented in each class. Of Hyacinths, Tulips, and bulbs there were 517 pots. Epergnes for the table and bouquets, which are prominent at all the Society's Shows, were very numerous, comprising no less than ninety-eight exhibits.

Referring to the schedule, which commences with A division, which is open to all, £5 for four plants brought out six collections. The plants were so good that the Judges awarded two firsts to Meers, Yule & Noble, gardeners to H. Pease, Esq., Pierremont, Darlington, and T. Fry, Esq., M.P., Woodburn, near Darlington, respectively; Mr. Yule exhibited a magnificent *Eucharis amasonica* with over thirty spikes; a superb plant 4 feet in diameter of *Dendrobium nobile*, containing over six hundred expanded flowers—two plants which elicited general admiration; a very fine *Clerodendron Balfourianum*, profusely flowered and fresh; and a good *Aphelxis macrantha purpurea*. Mr. Noble had a very large plant of *Tetradlea hirsuta*, profusely flowered; a large *Genetyllis fuchsoides*, well flowered but scarcely open; a good *Clerodendron Balfourianum*, and a plant of *Imantophyllum miniatum* superbum with ten spikes. Mr. J. Thompson, Fenham, nurseryman, Newcastle, was an excellent second with a charming plant of the *Cymbidium eburneum* with eleven flowers; also a good *Dendrobium nobile*, *Anthurium Scherzerianum*, and a small plant of *Clerodendron Balfourianum*. Mr. Moore and Mr. Methven were equal thirds, the latter showing a plant of *Phaius grandiflorus* with eighteen spikes. The prize of £5 for four Azaleas, dissimilar, only brought out two competitors. Mr. Methven, gardener to J. Lange, Esq., Heathfield House, Gateshead, was first with fairly flowered examples; and Mr. Wright, gardener to G. Talbot, Esq., Southfield, Leeds, was second. Mr. Yule was first in the class for three *Sikkim Rhododendrons* with superb plants of R. Veitchii, R. Nuttallii, and R. Countess of Haddington, all finely flowered, and received much admiration. Four collections of hardy forced shrubs were staged, Mr. Wright winning premier honours. *Deliyatras* were numerous, fresh, and good; Mr. Yule, Mr. Armstrong, High Cross, Benwell, and Mr. Noble, winning in the order mentioned. *Deutzias* were also good, Mr. Yule, Mr. Armstrong, and Mr. Wright being the successful exhibitors. *Genistas* were few but fresh, and *Spiraeas* were numerously represented, Mr. Watson, nurseryman, being first with plants over 8 feet across. *Cinerarias* were magnificent, and contributed greatly to the success of the Show. Mr. G. G. Golightly, gardener to J. G. Fenwick, Esq., Moorlands, Gosforth, was placed first with large plants, and Mr. Yule second with better flowers, very large, rich, and varied in colour. Eight collections of six plants were staged in the class. *Primulas* were good, Mr. Yule being first with fresh plants in 5-inch pots, old plants in 7 and 8 pots having the second place. Mr. Yule's *Cyclamens* were splendid and highly worthy of their premier position. Mr. J. Lawson, gardener to A. Hedley, Esq.,

Mayfield, Gosforth, was second with creditable examples of hardy Primulas. Lily of the Valley, Scillas, and Hepaticas were well shown in this division, as also were table plants. Mr. M. Thompson, gardener to Lindsay Wood, Esq., South Hill, Durham, was first with neat examples of *Dracena Bausei*, dwarf and richly coloured; *D. Renardei*, *Aralia gracillima*, and *Pandanus Veitchii*. Mr. Noble, and Mr. Whiting, gardener to E. J. Walker, Esq., Shot Tower, Newcastle, following.

We now come to the Auriculas, which attracted much attention. For twelve plants, dissimilar (Alpines included), Mr. E. Adams, Swalwell, was first; his best flowers being C. J. Perry, Richard Headly, George Lightbody, and a seedling, very fine with a white edge, the trusses ranged from five to ten pipes each. Mr. H. Sanderson, Whalton, was second; his best flowers were *Formosa*, Col. Champneys, with ten pipes, and Robert Trail; Mr. Hay, Killingworth Colliery, being third. In the class for six plants Mr. E. Adams was again first with Lord of Lorne, C. J. Perry, Rev. J. Jeans, Bright Venus, and C. R. Brown. Mr. W. G. Watson, Fenham, was second, his best flower being *Trail's Beauty*, which was very good. Mr. Hay and Mr. Garret following. For four Auriculas, dissimilar, Mr. E. Adams was in his old position—first, and Mr. Sanderson second. There were six entries in this class for one green-edged Auricula. Mr. Sanderson was first, Mr. Adams being in the same position in the grey-edged class. For the white-edge Mr. Adams was disqualified with *Trail's Beauty*, which had come grey-edged, although otherwise catalogued white; it was the finest flower in the Show, having thirteen pipes, and received the premier award for the best flower. For six Auriculas of the Alpine section Mr. G. Adams was first; Mr. W. G. Watson, Mr. J. Hay, and Mr. Garret following.

Polyanthuses were numerous, and some good flowers were shown, but several were inferior. In the class for six gold-laced varieties there were seven competitors. Mr. H. Sanderson was first with George IV., with fourteen pipes, Lord Morpeth, William IV., President, and others, and Mr. Wm. Atkinson, Winlaton, was second. In the class for one plant there were nine entries; Mr. J. Flowdy being first with Bucks' George IV. 295 pots of Auriculas and Polyanthuses were staged in the above classes.

We now come to the most important feature of the Show, the Hyacinths, which were considered by competent judges to be of much superior merit to those of last year; £5 for twenty-four plants in not less than twelve varieties produced five competitors. Mr. J. Thompson following up his success of last year by again being first with good spikes of *La Grandesse*, *Florence Nightingale*, *Koh-i-noor*, *Grand Lilas*, *King of the Blues*, *Gigantea*, *Madame Vander Hoop*, *Ida*, *Czar Peter*, &c. Messrs. Dewar & Co., nurserymen, Newcastle, were second with *Princess Mary of Cambridge*, *Solfaterre*, *Koh-i-noor*, *General Havelock*, and *Grand Lilas*. Mr. J. Watson was third with very large spikes and good flowers but rather drawn. For twelve Hyacinths Mr. J. Thomson was also first with well grown examples; Mr. Watson and Mr. Dewar taking the remaining positions with very good collections. Tulips were very good, but not nearly so numerous as the Hyacinths. For nine pots of single Tulips Mr. Watson was first with *Vander Neer*, *Keyzers Kroon*, *Proserpine*, *Vermillon Brilliant*, and *Pottebakker*. Mr. J. Thompson and S. Nairn & Sons, nurserymen, Pilgrim Street, Newcastle, followed in the order named. *Polyanthus Narcissus* were very good and well shown.

In the B division of the Show, open to gentlemen's gardeners only, some excellent plants were staged. For Azaleas, Mr. Charlton, gardener to J. Hedley, Esq., West Chertton House, was first. *Mignonette* was excellent. Mr. J. Hutchinson, gardener to J. J. Hunter, Esq., Whickham Grange, securing the first honours with large spikes, and Mr. Oliphant second: seven lots were staged. Mr. Whiting and Mr. J. Golightly were awarded the prizes for *Spiræas* and *Cinerarias*, and Mr. Yule followed up his extraordinary success by taking first in *Primulas* and *Cyclamens*. Wallflowers German and English, and Stocks, were numerous and good. Mr. J. Oliphant, Mr. Methven, and Mr. Golightly winning respectively. For twelve and six Hyacinths the chief prizes went to Mr. A. G. Brown, gardener to J. Barnes, Esq., Whitburn, and Mr. M. Connor, gardener to J. W. Pease, Esq., Pendower.

Cut Flowers and Table Decorations.—In the A division, for twelve *Camellia* blooms, Mr. Wright was first with good flowers. For twelve *Rhododendron* trusses Mr. Yule was first with grand blooms of *Gibsoni*, *Nuttall*, *Veitchianum*, and *Countess of Hadington*. For twelve trusses of Azaleas Mr. R. Armstrong was first with splendid flowers. For twelve cut blooms of *Roses* Mr. G. Corbett was first with superior blooms nearly 8 inches across of *Maréchal Niel*. For the drawing-room *epergne* Mr. M. D. Thompson followed up his previous successes by being placed first; his arrangement was superb, and elicited from the Judges special marks of approval. The top tier of the Marsh stand contained *Spiræas* and *Oncidium sphacelatum*; the second, *Clematis Moorei*, a charming lavender colour, and *Euphorbia splendens*. From this tier also hung down gracefully three blooms of *Medinilla magnifica*. The bottom tier consisted of heavier and richer coloured flowers, such as *Amaryllises*, *Pelargoniums*, and *Roses*, all effectively margined with *Davallia Mooreana*; but the special charm of the stand consisted in *Lygodium scandens*, dropping from the top tier, which

was quite unique. Mr. E. Oliver and Mr. G. Rymer, Sunderland, were second and third with good stands. Some of the unnoticed stands contained excellent flowers, choice and rare, but too crowded and devoid of artistic merit. Twelve bridal bouquets were shown. Mr. Wright was first with a good arrangement of *Spiræas*, *Lily of the Valley*, *Roses*, *White Camellias*, and *Orange blossom*; his bouquet was perfect in shape, not too close, with sufficient Fern to charm but not to conceal any of the flowers. The first prize for a hand bouquet was won also by Mr. Wright, seventeen being shown; and he further exhibited the best buttonhole bouquet, twenty-six being staged.

Not for competition was a stand of Alpine Auriculas by Mr. T. H. Hay, Killingworth Colliery; stands of *Pansies* by Mr. H. Cooper, Widcombe Hill, Bath; and a very fine collection of *Conifers* by Wm. Fell & Co., of The Nurseries, Hexham.

In concluding our remarks we have just reason for asserting that the Committee have good cause to feel satisfied with their Show, which adds one more triumph to their list; and it must be satisfactory to them to know that nearly all the prizes have been won by local gardeners, which has not been always the case, and thus they are achieving the desired object of improving the horticulture of the district.

The first day of the Show, like that of last year, was very wet, but on both days good companies were present; the Town Hall and Corn Exchange were always filled, and the financial result we believe will be satisfactory. The Secretary, Mr. Gillespie, Mr. Taylor, Captain French, Messrs. Balfour, Wilson, Salmon, Watson, and other prominent members of the Committee were present, and their courtesy and business tact added considerably to the pleasure of visitors and exhibitors alike.

CYPRIPEDIUM SPECTABILE FOR FORCING.

THIS is by far the largest and most showy of all the hardy *Cypripediums*, although none of them are to be despised, for they are all really handsome flowers for the herbaceous border.

I am not aware if it is generally known that *C. spectabile* makes a capital plant for forcing. About three years ago I took up from the open ground a large clump or two, and separated the crowns, as is generally the case, with *Lily of the Valley*. I picked out the largest and strongest, planting the weaker again in their old quarters. The largest crowns were placed in bottom heat and slightly covered with cocoa-nut fibre. In a few days the crowns commenced pushing, and it was quite surprising the rapidity with which they grew. When the plants were about 6 inches high it was easy to detect which were going to flower by feeling the top of them, as the flower buds were quite hard and prominent long before they were visible. I then potted them in a couple of pans and removed them to a cooler house, where they expanded their beautiful purple and white flowers in great profusion. The plants when in bloom were greatly admired by all who saw them, and what makes them more valuable as pot plants, they last a long time in perfection.—W. W.

SNAILS AND WALL TREES.

ALL will agree in the truth of the old adage that "a stitch in time saves nine," and to few things does it more forcibly apply than to the subject in question. Many young *Peach*, *Nectarine*, *Plum*, and other trees planted against walls are ruined in a night by the snails eating the growing buds that are indispensable for the symmetry and proper furnishing of the trees. If the buds requisite for forming the leader of a tree or for the primary branches are destroyed, or a portion of them, the succeeding growths very rarely indeed compensate for the loss. Many a misformed or "one-sided" tree is thus rendered unsightly by the snails, and much care is requisite and trouble involved in restoring the balance that has been lost. At this season of the year, therefore, when the trees are bursting into leaf and snails abound, too much care cannot be taken to prevent damage being done by the nocturnal marauders. It is a common and good practice when trees are planted to mulch the ground over the roots with manure; but this mulching, it must be remembered, affords excellent harbour for slugs and snails. At this season of the year when the sun begins to have power it is well to rake off a good portion of the mulching so as to permit the soil being warmed to induce root-action, and at the same time to remove the shelter that the snails enjoy. Soot also should be spread thickly and as frequently as is needed round the stems of the trees and along the base of the wall. A close examination, too, of the trees with the aid of a lantern at night will be time well spent, as half an hour's scrutiny, resulting probably in the catching of some of the molluscs, will save many days of after disappointment. The buds and

growing shoots may also be rendered distasteful to the snails by syringing them frequently with a solution of quassia chips, and this also will prevent the increase of insects.—ONCE A VICTIM.

NOTES AT KEW AND CHISWICK.

HAVING been several times lately paying short visits to both these gardens I venture to send a few notes, which may be of interest to some of your readers. My predictions of a favourable spring—which I ventured to give as far back as your number for January 29th, page 78, when speaking of Rose stocks and Rose prospects—have hitherto come true, and I never saw so much March dust or March sun. This has influenced the houses both at Kew and Chiswick very much; for though evergreens suffered in the valley of the Thames much more than usual, and frosts were very severe in January, yet the vegetation in February and March has been very rapid, and now on the 5th of April I hardly ever saw spring flowers so forward. I fear that Apples and Pears will not be a good crop owing to the moist summer and sappy growth, but I have seen great promises on the commoner Plums, such as the blue Orleans and others grown freely for the London markets in the orchards near Barnes, Richmond, and Mortlake. To return, however, to Chiswick and Kew. Amongst other plants at Chiswick the new seedling *Abutilons* have been most interesting, and have flowered and grown freely. Amongst whites there are none better than *Seraph* and *Boule de Neige*. A yellow seedling, I think of Mr. George's, which might be called, if it is not, *Boule d'Or*, is very perfect, and so are many of the striped lilacs, deep pinks, and some nearly approaching crimson; but the Society, I believe, published a list of the best on trial, and are going to report again on others. The *Primulas*, too, were very fine in February and early in March. *Eva Fish* was one of the best. There were also some very beautiful specimens of *Imantophyllum* in deeper shades of colour than are usually seen.

Kew suffered, as also did Chiswick, from fracture of glass, and the first time I went there several of the houses were closed—some for painting and repair, and another on account of boiler injury. The Ferns in the warm house are doing remarkably well, especially the *Lygodium* section, as *scandens* and others, which are climbing well up the pillars. The smaller Tree Ferns of the *Cyathea* tribe and some drooping plants of *Polypodium* were very striking. In the cooler greenhouse there is at present and have been some very interesting plants. I noticed each time that the *Hebeclinium*, a flower like a large *Ageratum*, is in a very good flowered condition; but unfortunately, owing to its having very large foliage, it flags its leaves with the least sun, as I find it does with me. *Veronica Hulkei* is in very beautiful bloom. This is a plant not much known, I think, or grown. It looks in the distance almost like a Persian Lilac, but it is a very delicately shaded free-flowering lilac *Veronica* that blooms at the ends of the younger shoots and sends out side spikes of flowers on the flowering stems. Several heads of bloom were 7 to 9 inches long with these side spikes. It is nearly hardy, or at all events will bear the same treatment, I understand, as the *Spiræas* or *Deutzias*, and I have no doubt would make a useful border shrubby plant in the south of England or in sheltered places in the north. *Pul-tædenia stricta*, another greenhouse plant, a Pea-shaped flower, was in good bloom; and *Tremandra hirsuta*—bunches of bell-shaped flowers, lilac with a deeper eye—is a very useful plant treated like *Epacris* or *Ericas*. The old Trumpet Honeysuckle, (*Lonicera sempervirens*) and several of the early *Clematis*s are just beginning to bloom. Amongst other flowers, too, I noticed *Triteleia uniflora*, which reminded me of a white variety of a rather rare plant, the *Aphyllanthes cæruleum*, which grows in the woods on the Riviera, and which pushes out bright blue flowers on the ends of reed-like stalks, and it has no other leaves. Amongst other plants in good bloom were the *Sparmannias* and the light yellow *Acacia Drummondii*. In the house where the *Agaves*, *Aloes*, *Opuntias*, *Cacti*, and plants of that character are grown is a fine flower stem of the *Agave univittata* 12 feet high, touching the top of the house, and one coming into bloom of *Agave densiflora*, which promises to be very fine.

On the way to the Orchid houses there is a specimen of *Cochlostema Jacobianum* from Ecuador; large spikes with branching stems, the flowers drooping, with light whitish-lilac outer petals and deep purple eye—seven spikes, with others coming on, and it promised to be very striking. Among the Orchids is a very good plant of my favourite winter Orchid, *Coeloglyne cristata*, with its fragrant white flowers and yellow

crested labellum. It is one which always interests me, as it was one of the first Orchids I ever saw, and was sent as a present to my mother from a nephew in India more than forty years ago. We had no name with it, and it was a long time before it flowered, and it was not for some time after that I knew the name. I took the plant with me into Yorkshire in 1854, and it proved much harder than ever I anticipated, and bloomed in a mere greenhouse, where it had one winter to stand 4° or 5° of frost. Amongst other Orchids were very good specimens of *Dendrobium nobile* and *D. densiflorum*, with large spikes of their golden and orange blossoms; *D. Pierardi*, with delicate bright blooms. There were also good spikes and flowers on *Oncidium luridum*, a spike nearly 5 feet long; *Vanda suavis* in good colour, and a particularly bright yellow bloom of *Anguloa Clowesi*, also two very good Orchids—*Odontoglossum cirrhosum* and *Cypripedium Boxali*. There were also four plants of *Sarracenias* (the Pitcher-plants) in bloom—*S. Drummondii*, *S. suavis*, *S. flava*, and *S. hybrida*. The contrast of the flowers with the pitcher-shaped leaves is interesting. The large Palms in the Palm house are making very rapid growth, especially *Sabal glaucescens*, *Phoenix dactylifera* (the Date Palm), and there is a very magnificent leaf on *Caryota Rumphiana*, which in its present state of growth is very striking and majestic. The *Synacanthus fibrosa* has ripened its red berries. Some of the African bush plants, especially the different species of *Encephalartos*, are interesting to examine, as they give a good idea of what riding through an African bush might be if many plants of *Encephalartos horridus*, together with the *Agave*, *Aloes*, and *Yuccas*, were in the path mixed up with bush grass and leaves. I may conclude by saying everything seemed to be well cared for and in good order.—C. P. PEACH.

BLUNDERING ABOUT BULLFINCHES.

MR. HARRISON WEIR's exhaustive article on this subject at page 266 ought to settle this matter for ever; but as nothing is harder to kill than a scientific blunder let me hammer in another nail. I know two gardens within a few hundred yards of each other; soil, aspect, varieties of Gooseberries similar. Last year in the one garden the bullfinches were shot or driven away by shooting early and late, in the other no gun was allowed to be fired. Results: In the former garden there was a very large crop which I saw; in the latter there were none except on the extreme tips of the shoots, which the birds were not able to perch on and pick the buds out of. A scientific man, unless he be a practical man, is no guide. Then, too, your devotees to science are apt to have prejudices. Give me a gardener's pair of eyes in a garden in preference to a microscope handled in some room in London upon this subject. Chaffinches do little damage—you have only to cover up seeds awhile. Neither do I think so ill of sparrows as some do; theirs is evil mixed with good, but the bullfinch's work in a garden is nothing but evil. The formation of his beak condemns him.—WILTSHIRE RECTOR.

CAMELLIAS AND RHODODENDRONS IN THE OPEN BORDERS.

It is only occasionally that we see healthy *Camellia* trees 10 feet high at the present time of the year flowering very profusely out of doors, but such is the case in several gardens around Penzance, especially at *Pendrea* and *Gulval*, where they may be seen now nearly one mass of blooms. The largest tree is about 15 feet high.

The *Camellia* here seems to be almost the first shrub to welcome spring; it usually flowers from the end of February and continues for a very long time. They have withstood our winters for many years.

Rhododendrons are also in full bloom, and have been for some weeks past; and at *Trewidden*, *Madron*, about half a mile from Penzance, there is an extensive grove of the *Pinaster Fir*, underneath which are most beautiful and gigantic *Rhododendrons*, reaching at the present about 20 feet high.—W. ROBERTS, *Penzance*.

ATACCIA CRISTATA.—This very peculiar plant is now flowering in the stove at Kew, and deserves notice for the singularity of its form. The species is a native of the Malayan Archipelago, and is included in the small natural order of monocotyledons, *Taccaceæ*. The leaves are oblong, greenish purple in colour, and are produced from a short rhizome,

which also bears a scape about the same length as the leaves. On the summit of the scape is an involucre composed of leaf-like bracts, the two outer opposite (pointing upwards and downwards), and very dark purple in colour; the two inner side by side in front of the upper outer bract, very much larger, green, stained with purple at the base. About a dozen slightly pendulous flowers are clustered within the involucre, the six curious brown-coloured perianth divisions of each flower being strongly reflexed, forming a small cup, in which the large purplish anthers are closely ranged round the stigma. From among the flowers arise numerous long filiform antennæ-like processes, a foot or 18 inches in length, slightly drooping, purple at the lower part and greenish white near the apex, giving the plant a most remarkable and striking appearance.—L.

STANDARD ROSE TREES.

YOUR correspondent "C. P. P." says, "I do not think the frosts this year will have done nearly the same injury to Roses as last year." I am afraid the reverse is the case here. Last year I lost comparatively few; such tender varieties as *Devoniensis*, Jean Pernet, Comtesse Riza du Parc, Triomphe de Rennes, and Madame Margottin survived, and though every dormant bud of *Maréchal Niel* and *Belle Lyonnaise* was killed and nearly all the old plants too, a few survived. This year every Tea-scented Rose I had on the standard is killed outright with the exception of *Gloire de Dijon*. Some fine healthy plants of *Homère* were only slightly injured last winter, and *Céline Forestier* seemed not much worse, while *Madame Berard* and *Cheshunt Hybrid* were apparently uninjured; this year, as I said before, all are gone. I doubt if there be a *Maréchal Niel* alive in the district as a standard. Another Rose which has suffered very much is the *Bourbon Souvenir de la Malmaison*. I had some grand old plants, but all have perished, and others have told me theirs are dead too. I fear Tea-scented Roses as standards are exterminated in this part of the country, excepting old *Gloire*, which is very hardy; in fact my younger plants of it have stood better than any of the Hybrid Perpetuals. The old plants have not stood so well; I have lost two that were perhaps twenty years old. *Cheshunt Hybrid* has been cut very badly this year, though last winter did not seem to touch it. Amongst the Hybrid Perpetuals all the Victor Verdier type have suffered greatly, and numbers are killed. *Star of Waltham* and *Hippolyte Jamin* appear the hardest in this section. *Comtesse de Serenye*, *Marquise de Castellane*, and *Abel Carrière* seem hardy. The two former have not suffered in the least with me, but nearly all others are injured more or less, depending on the condition of the plants when the frost came on. Those with early growth and ripened wood have stood the best, and those that were growing late the worst. The result of what I have seen about here and of my own experience has convinced me that standards are not worth the trouble, expense, and annoyance they entail.—F. BOYES, *Beverley*.

ROYAL HORTICULTURAL SOCIETY.

APRIL 18TH.

ALTHOUGH the exhibits were not unusually numerous on this occasion, they were of great interest. The majority were arranged in the conservatory, where the groups from Messrs. Veitch, Osborn, and the General Horticultural Company formed the chief attractions. There were no entries of fruit or vegetables. The system adopted at this meeting of placing in the Council-room a list of the exhibitors to whom medals were awarded, and of the plants for which certificates were granted, deserves great commendation.

FLORAL COMMITTEE.—Dr. Denny in the chair. The most attractive group in the conservatory was that contributed by Messrs. Veitch & Sons, Chelsea, which was composed of a large number of handsome Orchids, *Rhododendrons*, and a few Palms. About 160 Orchids were shown, comprising some good specimens of the most attractive species and varieties in cultivation, many choice and delicate forms being represented. *Dendrobiums* were particularly numerous, and an excellent idea of the exceptional beauty of this genus could be gained from the species in the collection. The lovely *D. Dalhousianum* was bearing two racemes of its large pale buff-coloured flowers, the labellums having near the base two large roundish deep purple blotches; *D. Devonianum* had four growths with about fifty flowers, the whitish petals, sepals, and labellums being tipped with purple, and the latter marked with yellow in the centre; *D. chrysotoxum* was bearing nearly twenty fine racemes of bright yellow neatly formed flowers; *D. densiflorum* had three large racemes of flowers, the white sepals and petals pleasantly contrasting with the golden labellums; *D. Farmeri*, a very beautiful species, had large racemes of flowers,

the sepals and petals pale bluish white, the roundish labellums being pale yellow in the throat; *D. Jamesianum* had pure white flowers, a long labellum blotched with bright orange red in the centre; *D. tortile roseum* was noteworthy for the pale purple, narrow, curled sepals and petals, with a somewhat trumpet-shaped pale yellow labellum; *D. infundibulum* somewhat resembled *D. Jamesianum*, the petals, however, were much broader, the labellum larger, more frayed, and marked with chrome yellow; the bright purple *D. litiflorum*, the well-known *D. crassinode*, *D. nobile*, and the small-flowered pure white *D. japonicum*, together with others, were admirably represented. Fifty-seven *Odontoglossums* were staged, including *O. Roezlii*, *O. triumphans*, *O. nebulosum*, *O. cirrhoosum*, *O. pulchellum*, *O. cordatum*, *O. Pescatorei*, and many other equally attractive forms in fine condition. *Lycastes*, *Oncidium*, *Cattleyas*, *Masdevallias*, and *Epidendrums* were represented by good specimens. Among the specialties were *Hunleya Meleagris*, a Brazilian Orchid, with large peculiar brownish flowers, produced singly in the axils of the leaves. A first-class certificate was awarded for it. *Lælia flammea*, a hybrid between *L. cinnabarina* and *L. Pilcheriana*, with narrow orange-coloured sepals and petals, and a crimson-tipped labellum. *Odontoglossum Cervantesii decorum*, a large-flowered form of this beautiful species, and a remarkably richly-coloured variety of *Sophronites grandiflora*. Handsome specimens of *Rhododendron Princess Alice* and *B. Veitchii* were exhibited, the plants of the former bearing an immense number of large white fragrant flowers. First-class certificates were granted for the following:—*Calanthe tricarinata*, a hardy Orchid, with racemes of small yellowish green flowers; *Amaryllis Prince George*, the flowers of which were large, of good form and breadth of petal, and rich crimson in colour. For this excellent group a large gold Banksian medal was awarded.

A tasteful group was sent by the General Horticultural Company, comprising Palms, Ferns, *Dracenas*, *Orchids*, *Asaleas*, *Caladiums*, *Anthuriums*, and many other attractive plants. In the centre was a cluster of *Odontoglossum vexillarium*, one specimen bearing nearly three dozen fine flowers. Some deeply coloured varieties of this beautiful species were also shown. Among the *Dracenas* *D. Gladstonii*, *D. Berkleyi*, *D. Elizabethæ*, *D. Anerleyensis*, and *D. Rebecce* were especially noticeable for their finely coloured foliage. The new Fern *Adiantum Bausii* was represented by specimens which showed the elegant drooping habit to the best advantage. A gold medal was awarded. Mr. Aldous, florist, Gloucester Road, was adjudged a silver Banksian medal for a large group of *Spiræas*, *Deutzias*, white *Hyacinths*, and *Chrysanthemum frutescens* intermixed with Palms, Ferns, and *Selaginellas*. A cross and wreath of white flowers, such as *Eucharis*, white *Lilac*, *Stephanotis*, *Lilies of the Valley*, and white *Camellias* were also exhibited. Messrs. J. & J. Hayes, Edmonton, exhibited about twenty plants of *Pelargonium Maid of Kent*, an excellent variety of compact habit and remarkably floriferous; the trusses of moderate size, the flowers very densely crowded, the petals being white slightly crimped round the margins, and veined with rosy purple in the centre. A silver Banksian medal was awarded.

Messrs. Osborn & Sons, Fulham, sent a collection of *Asaleas*, Palms, Ferns, *Anthuriums*, *Imantophyllums*, and other stove and greenhouse plants, which was honoured with a similar award to the last mentioned group. Messrs. Barr & Sugden, Covent Garden, staged an excellent collection of *Narcissi* comprising a very large number of the best varieties and species, representing nearly all the sections of the genus admirably. Mr. J. Walker, Thame, Oxon, exhibited two boxes of *Roses*, one containing over thirty remarkably handsome blooms of *Maréchal Niel*, and the other containing very good examples of *Belle Lyonnaise*, *Cheshunt Hybrid*, *Madame Falcot*, *John Keynes*, *Lamarque*, *Madame Favart*, *Climbing Devoniensis*, *Jules Margottin*, *Niphetos*, and *Comtesse d'Oxford*. A cultural commendation was deservedly awarded for these fine blooms.

Comparatively few plants were staged in the Council-room, and nearly all of them were subsequently removed to the conservatory. Mr. B. S. Williams, Upper Holloway, exhibited several plants for certificates, which were granted for the following—*Choisya ternata*, a pretty evergreen Mexican shrub, that, although by no means new, is not very common in gardens. The white fragrant flowers are borne in terminal heads, the ternate leaves being dark shining green; and *Coleus Mrs. Geo. Simpson*, a very distinct variety with extremely large leaves marked with maroon and crimson. The Cranston Nursery Company, King's Acre, Hereford, exhibited blooms of a seedling Tea Rose, dull rosy crimson in colour but rather loose; and a first-class certificate was awarded to them for cut flowers of *Hoya globulosa*, an extremely pretty species with dense globular heads of creamy white highly fragrant flowers. G. F. Wilson, Esq., Weybridge, exhibited a seedling Primrose named *Herman Wilson*, for which a first-class certificate was granted. The flowers were large, of good form and rich purple in colour, with a clearly defined yellow edge. A first-class certificate was awarded to Mr. Walter Cobb, Silverdale Lodge, Sydenham, for *Odontoglossum polyanthum*, a pretty species, with pale yellow sepals and petals spotted with brown, and a dull brown fringed labellum. Mr. H. Cannell, Swanley, sent cut blooms of *Zonal*

Pelargoniums in excellent condition, comprising such fine varieties as Titania, Col. Seely, Alice Spencer, Cleopatra, Lizzie Brooks, Sybil Holden, Alice Carr, and New Guinea.

Mr. Howard, Southgate, obtained a first-class certificate for *Chrysanthemum frutescens* Etoile d'Or, a pale yellow free-flowering form of this well-known useful plant. The same honour was bestowed on *Fritillaria Moggridgei*, a dwarf species with drooping yellow-spotted flowers, from Messrs. Backhouse & Son, York. Mr. John Linden, Ghent, Belgium, sent a specimen of a handsome *Anthurium* from Colombia, named *A. Andreanum*. The spathe was about 4 inches long and broad, of an extremely bright scarlet colour, and curiously bullated or indented like a Savoy leaf; the spadix was white at the base and yellowish at the apex. Dried specimens were also exhibited which showed the spathe much larger than in the living plant. For this very distinct plant a first-class certificate was granted. Mr. Linden also showed a specimen of *Azalea indica* gardenisflora, a variety with semi-double white flowers. Mr. Bennett of Salisbury exhibited flowers of the Hybrid Tea Rose Duke of Connaught, very neat in form and rich colour. A vote of thanks was accorded to Mrs. Ashton, 6, Elgin Road, St. Peter's Park, for dried natural flowers, in which the colours were excellently preserved.

During the afternoon Mr. Shirley Hibbard delivered an instructive and interesting lecture on Narcissi (see page 801), which was largely attended by an appreciative audience.

DEATH OF MR. ROBERT FORTUNE.

JUST on the eve of going to press we learn with much regret, which thousands will share, that the well-known traveller in China and Japan, Mr. Robert Fortune, died on the 13th inst. at No. 1, Gilston Road, London, S.W., in his sixty-eighth year. He was born at Kelloe, in the parish of Edrom, County Berwick. The services that this gentleman has rendered to the horticultural world are of great importance; for during the travels, which he has so pleasingly described in his various works, he discovered and introduced to this country many extremely ornamental plants. Some of the best known of these are the following:—*Lilium auratum*, *Dielis spectabilis*, *Jasminum nudiflorum*, *Foraythia viridissima*, *Weigela rosea*, *Rhynchospermum jasmuinoides*, *Skimmia japonica*, the Pompon and Japanese *Chrysanthemums*, the male plant of *Aucuba japonica*, several *Retinosporas*, and other Conifers; but those enumerated are a small proportion of the total number, which amount to nearly two hundred, that are enriching the gardens of Europe. These plants admittedly possess permanent worth, and collectively form an enduring memorial of the zeal, labour, and discrimination of this most successful British collector.

TRAPPING SLUGS.

THE good old plan of making baits of bran for enticing slugs to their destruction has been lately adverted to; and it reminds me that many years ago I copied some hints from an old volume, and as they have been useful to me I send them in case they may be of service to others. They are as follows:—"Slugs are now active and will shortly come forth in still greater numbers from their hiding places. Their ravages will then be felt in every department of the garden, but especially in the kitchen garden, where young seedlings of the Cabbage, Lettuce, and Pea tribes are especially liable to their attacks. There are many ways to trap and destroy these vermin, but the most successful and sweeping mode to operate upon them is to have some fresh brewers' grains in a bucket, and from these to drop upon the bed pinches here and there, as fast as you like to walk. Do this in the dusk of the evening, and about three hours afterwards go round with a bucket of freshly slaked lime, and sprinkle some over the numerous guests which will have collected to partake of the grains. If slugs abound, and the evening is quiet and moist, they will collect in a short time about the grains in multitudes not to be imagined by those who have not put this simple method to the test. Then our method is to send a boy round at daybreak with a small spade or garden trowel to collect the betrayed foes into a bucket or to bury them on the spot if it does not interfere with the crop, thus converting a destructive enemy into manure at once. New bran also is a most excellent bait if dropped about in the same way, but we find it does best scalded first, as it appears the slugs are attracted to it by the smell. Scooped-out Turnips out in halves or quarters, placed about with the outside of the Turnip upwards will also attract slugs, and so will Swedish Turnip tops, Cabbage leaves, Broccoli leaves, and many other articles of that kind, but thus to destroy them in a large garden amounts to much labour, which is only another word for expense.

Salt is also a very good article applied on dull, misty, mild nights, or early in the morning, but it requires to be applied with much caution; besides, it only destroys those that are out from their hiding places, and those only which the salt happens to fall on. The same may be said of slaked lime. Let it also be borne in mind that a great help to keeping the soil free from slugs and other vermin is to trench and drain the soil well. Forking, hoeing, and surface-stirring on every suitable occasion all tend to a similar good result, at the same time that they promote the health of the growing crops." That is sound advice, as I have proved by long experience, and if it is carried out in its integrity will result in fewer slugs and better crops of vegetables and also of flowers.—SEPTUAGENARIAN.

NOTES AND GLEANINGS.

MR. DOUGLAS informs us that the NATIONAL AURICULA EXHIBITION which is to be held in the Royal Horticultural Society's Gardens, South Kensington, on the 20th inst., is expected to be of a more interesting character than usual, and the Committee expect that the numbers of exhibitors will be very greatly increased. The recent cold weather has retarded the bloom considerably, and it is hoped that the northern growers will not materially suffer thereby. The new classes for seedlings, fancy Auriculas, fancy Polyanthuses, and species of *Primula* will add very greatly to the interest of the Show. The following firms have signified their intention of exhibiting on the occasion:—Messrs. Veitch of Chelsea, Roses, &c.; Messrs. Paul & Son, Cheshunt, Roses; Mr. B. S. Williams and Messrs. Osborn, miscellaneous groups; and Mr. T. S. Ware, hardy plants. Probably other firms will aid the Society and add to the interest of the Exhibition. Hardy spring flowers even in small groups would be very much appreciated. Altogether the display will be highly attractive and well worthy of extensive patronage.

— AT a General Meeting of the ROYAL HORTICULTURAL SOCIETY held on Tuesday last, Dr. Denny in the chair, the following candidates were duly elected Fellows—viz., Alex. Gordon, Mrs. Bertram, F. Hartshorne, Mrs. H. F. C. Lewin, J. B. Mackay, T. I. D. Mackintosh, Mrs. Constance Talbot, and Gen. Hill Wallace, C.B.

— CONCERNING *RUBUS PHENICOLASIUS*, Mr. W. Potten of Sissinghurst writes as follows:—"I have a specimen which I planted in my nursery last summer, and it is now looking well and making strong young shoots. It had no protection whatever through the late severe winter, when my thermometer registered 27° of frost, or 5° above zero."

— MESSRS. KELWAY & SON of Langport, Somerset, have sent us some blooms of SEEDLING CINCERARIAS, several of which are unusually large and include some excellent shades of colour. The most noticeable is a flower of medium size and of good form, the colour being an uncommonly bright rosy purple.

— AMONGST the Judges' recommendations for awards at the SYDNEY INTERNATIONAL EXHIBITION, published in "The Colonies and India," is included the firm of "Messrs. Carter Brothers, London, first prize for seeds." We learn that Messrs. James Carter & Co., 237, High Holborn, is the firm entitled to this honour, as no other firm of the name exhibited seeds at Sydney.

— IN a large batch of SEEDLING COLEUSES, comprising about thirteen hundred plants, at Messrs. Carters' nursery, Perry Hill, are several distinct and richly coloured forms, but the majority require a little more bright sunny weather to bring the colours out to advantage. Some of the best at the present time are the following:—Mrs. Sharman, an attractive variety, with leaves streaked and variously marked with crimson and yellow; Trissy Appleford, dark crimson, green and gold margin; Miss Florence, crimson centre, spotted, yellow and green margin; Master Wilmot, bright crimson, yellow margin; and Royal Purple, crimson purple with lighter veins and green edge. Many others will also no doubt prove distinct and good when the colours are fully developed. Although the popularity of these plants has somewhat decreased owing to the number of varieties that have been produced in recent years, still they are very serviceable for decorative purposes during the summer, and as such the gardener cannot afford to dispense with them.

— IN the same nursery is a very good collection of PANSIES, including many seedling forms of great merit. The flowers are large, well formed, and brightly coloured, comprising many excellent shades of purple, yellow, and maroon.

The bedding varieties are also noticeable for their good habit and floriferousness.

— A SPRING SHOW has this year been held for the first time in the borough of Gateshead—namely, on April 5th, in the Town Hall, and was a marked success. Nearly every spring flower was represented, Hyacinths being in particular very fine. The Society is under distinguished patronage, and with an energetic Committee bids fair to be a success.

— It is well known that TUBEROUS BEGONIAS receive great attention at the Stanstead Park Nursery of Messrs. Laing and Co., but it is not equally well known that upwards of twenty thousand seedlings are annually raised there. The batch of young plants for the present year are the results of many hundred careful crosses between all the best known varieties, and some excellent novelties may therefore be confidently expected. Especial attention is directed to improve the colours and produce a roundness of form in the flowers combined with floriferousness and compactness of habit. The handsome groups that this firm frequently exhibit at the various horticultural exhibitions, and the numerous varieties that have been honoured with certificates, testify to the success that has attended their efforts in this direction. It is rather curious to notice the great difference in the time of germination and subsequent progress of the seedlings. For instance, the whole of the seed was sown from January the 9th to the 11th; but while some of the plants that had been pricked off in pans are now large enough for potting singly, yet others are only just appearing above the soil, thus having taken about three months to germinate. The stock of named varieties are now being extensively propagated by cuttings to meet the great demand that exists for these plants.

— WE regret to announce the DEATH OF MR. J. POWELL of the Royal Gardens, Frogmore, which occurred on the 9th inst. from paralysis, in the 62nd year of his age. Mr. Powell had a great knowledge of hardy fruits, and was a skilled cultivator and estimable man. We cannot adduce higher testimony of the general worth of Mr. Powell than by publishing a letter from Miss Ingram, an old and honoured name familiar to our readers. "On the completion of the Royal Gardens," writes Miss Ingram, "my father wished to engage a competent person to superintend the wall and outdoor fruit department, and was recommended Mr. J. Powell, by Mr. Wilson, gardener to the Duke of Norfolk at Arundel, with whom he was then living. He came to Frogmore in 1844, and entered heart and soul into the duties of his place and profession and to the culture of and improvement of fruits generally, and thus became my father's right hand in the raising and perfecting of the many new and beautiful fruits that were sent out from Frogmore. Of the numerous young men who were placed under Mr. Powell in his long career few, if any, had cause to regret it; his kind and gentle manner won the esteem and respect of all. The admirable manner in which he managed the great extent of walls was universally admired, and his name will not soon be forgotten by all his friends and lovers of horticulture."

— MR. ANDREW ARMSTRONG, formerly head gardener to the Rev. Thomas Best at Andover, Hants, takes charge of the garden establishment of R. S. Dunbar, Esq., Eagle Cliff, Greenhithe, Kent.

— MANY excellent ORCHIDS are now flowering in the houses at The Firs, Laurie Park, Sydenham, the residence of C. Dorman, Esq., whose collection of these popular plants comprises a selection of the best species and varieties in cultivation, as well as numerous extremely rare forms. One of the most noticeable is a handsome specimen of *Dendrobium Freeman* bearing over forty large bright purple flowers, thickly clustered on the stems. *D. Devonianum*, *D. crassinode*, and *D. crystallinum* are also in good condition. *Odontoglossums* are well represented by a number of plants of *O. Pescatorei*, *O. pardinum*, *O. cirrhosum*, and *O. Rossi majus*. *Masdevallia Lindeni* and *M. ignea* are flowering freely, one variety of the latter being especially deep and bright in colour. *Ada aurantiaca*, *Colax jugosus*, *Anguloa Clowesi*, *Zygopetalum*, *Cattleyas*, *Oncidium*, and many others assist in rendering the houses particularly bright, and the general healthy appearance of the plants reflects considerable credit upon the management of the gardener, Mr. Coningsby.

— AMONGST the numerous plants now flowering in the conservatory at Kew are some fine examples of *VERONICA HULKEI*. The flowers are of a pale lavender colour, and borne in panicles of a foot or more in length. This is by no means a common species; its free-flowering qualities recom-

mend it to be more generally cultivated in collections of greenhouse plants. It thrives well in an admixture of fibry loam with a little peat and sand, potted rather firmly.

— *SANGUINARIA CANADENSIS* (the American Puccoon or Bloodroot) is one of the few hardy plants now in flower; and although its beauty is of short duration, like that of its allies the Poppies, yet the pure white flowers usefully assist in brightening the borders of herbaceous plants at this season. The leaves and flowers rise to a height of 6 or 7 inches from a creeping underground rootstock, each flower being accompanied and at first partly surrounded by a lobed, somewhat glaucous, reniform leaf. The petals are oval in form, white, and vary in number from eight to twelve, soon falling after the flower is fully expanded. The root is used medicinally, being considered a good expectorant and emetic; but it is chiefly patronised in America, where great efficiency is attributed to its properties. The American Indians, also, were accustomed to staining their bodies with the yellow juice extracted from the root somewhat in the manner that the ancient Britons employed the Woad.

CAPSICUMS AS DECORATIVE PLANTS.

SEEDS of the above if sown now produce good bushy plants by autumn if liberally treated while growing. They are then very attractive in the conservatory during the dull autumn months when loaded with their bright red and yellow fruits. The following varieties are excellent for this purpose:—Large Red, Long ditto, Yellow ditto, Prince of Wales, Princess of Wales, Cherry, and Yellow Gem.

My mode of culture is as follows:—I sow the seed now in 32-size pots, and place them in bottom heat, where the seeds soon germinate. When the plants are large enough to handle prick them off three in a 60-size pot, and again plunge in bottom heat. Next shift them singly into 48-pots, and place them in a close frame, not admitting much air for a few days, syringing freely, and closing the frame early in the afternoon. The final shift is into 32's, returning them to the frame and still keeping close till the plants are established into the new soil, when air may be admitted more freely, for by this time they will be in flower. The plants should be allowed plenty of room, and should be kept as close to the glass as possible. By the time the pots are filled with roots the plants will require weak liquid manure at least twice a week while the fruit is swelling, and when ripe withhold liquid manure altogether. The compost I employ is good loam, leaf soil, decayed manure, with a little sand, and I find this suits them well. During autumn they are very attractive if arranged in the conservatory with other plants, and when no longer required for that purpose the fruit can be cut off and taken into the house for making Chili vinegar and other uses.—F. H. FROUD.

PLATES AND DISHES AT HORTICULTURAL SHOWS.

IN many schedules of horticultural shows a rule is given that all exhibitors must find their own plates and dishes on which to exhibit their produce. I am sure that exhibitors as a rule will agree with me that this is one of the most inconvenient rules that possibly could be made. I know it is awkward enough for local exhibitors at any show to bring a number of plates and dishes with them, but it is much worse for the exhibitor who goes a long distance. Whether it is best for such to take a hamper of plates with them or obtain them there it is hard to say. Both ways in my opinion are very objectionable. I know from experience how difficult it is to take a great many different garden productions to a strange show, and the great advantage it is when all possible assistance is given to an exhibitor when he arrives on such an occasion, and I am sure that all connected with shows would confer a great benefit on exhibitors were they to provide the plates and dishes necessary. I feel sure exhibitors would willingly give a few pence more in entrance money to defray any expense incurred in providing them.

Last year in exhibiting at Newport, Monmouthshire, my train arrived there only a short time before the time by which all exhibits were to be staged. When I reached the Show, some distance out of the town, the Secretary very graciously advised me to go back to the town in search of a China shop to obtain dishes, and when this was done there was no time left to do the staging in a creditable manner. If the dishes had been obtainable in the Show it would have been very different. I know several exhibitors who have expressed the great trouble

and inconvenience entailed on them by procuring plates; besides, it is not only obtaining them that includes the whole of the trouble, but after the Show is over they must either be taken back or kept and paid for.

As a rule shows are so arranged that they close a few minutes before the last train leaves, and the hurry and bustle which has often to be exercised in collecting the exhibits to meet this are well known to most exhibitors. Could the plates be left on the tables to be collected by the officials it would be a great advantage. I feel sure so long as the rule in question exists there will always be cause for complaint by exhibitors; and although some may say that those who do not like to find their own plates need not exhibit this is only a very poor apology, as it is in the interest of all show committees to do what they can to uphold the credit of their show and study the comfort and convenience of exhibitors, especially those from a distance.

As many schedules for the present year will soon be printed let a rule be inserted to the effect that all plates and dishes will be supplied by the Society, and I will warrant them many expressions of approval on the show day. I have nothing to say against exhibitors having to find their own stands and boxes, as many fruits and flowers, such as Grapes and Roses, can be most conveniently taken to the Show on and in them.—J. MUIR, *Margam*.

CULTURE OF PERISTERIA ELATA AND PHAIUS GRANDIFOLIUS.

Peristeria elata.—A well-bloomed plant of this old terrestrial Orchid is sure to have its share of admiration, whether seen in the exhibition tent or in the Orchid house, from the dove-like appearance of the flower. My mode of culture of this curious Orchid is as follows:—I generally repot the plants once in four or five years when growth is commencing. All dead roots are cut away, and the pseudobulbs are well washed with soapy water. The compost employed consists of three parts of turfy loam, from which all the loose soil has been shaken out, broken in pieces about the size of a hen's egg, and sifted so as to have the compost as open and porous as possible. The other portion of the compost consists of leaf soil and decayed stable manure, with a quantity of charcoal and sandstone in small pieces mixed well together. I employ pots 16 inches in diameter, placing 3 inches of potsherds at the bottom for drainage and some turfy loam over the crocks; then fill up the pot with the compost, which may be slightly raised above the rim of the pot, as it will soon settle down. When the pot is filled I select the strongest pseudobulbs of the preceding year with young growth visible and place them upon the top of the compost, taking care not to bury the young growth, and gently press it down, a small stick being placed to each pseudobulb to keep it firm. The surface is sprinkled with silver sand, and as soon as the bulbs emit fresh roots water is given, the supply being increased with the growth. When the pot is filled with roots and the plant in active growth liquid manure water is applied once a week, but in the winter when the plant is at rest no more water should be given than is needed to keep the pseudobulbs from shrivelling. The leaves will require frequent washings in the summer to remove white scale, which is very troublesome. The Orchid house where the plants were kept contained East Indian Orchids, the minimum temperature in winter being 60° at night.

Phaius grandifolius.—This is another fine old Orchid. The compost I used for this plant is the same I have described for the *Peristeria*. I generally repot the *Phaius* once in two years. I divide the plant and repot the strongest growths, placing three or four pieces in one pot. I do not place all the pieces in the centre of the pot, but place them at equal distances apart. Since adopting the above plan I have always had fine strong flower spikes every year.—JOHN NUNNA, *Wimbledon*.

GILBERT'S CABBAGE BROCCOLI.

JUDGING from remarks by others in your contemporaries, and from what I had previously seen of this "hybrid," I was under the impression that it was more of a Cabbage than a Broccoli. Early in the season no doubt it might be correctly described as being a Broccoli-flavoured Cabbage, and even if this were its only recommendation it gives promise of being a valuable addition to our rather limited list of extremely hardy vegetables. I have, however, quite recently—thanks to Mr. Gilbert—had an opportunity of dissecting and tasting a

good specimen, and I am now of the opinion that it is really a Cabbage Broccoli. In its outward appearance it resembles a well-grown conical-headed Cabbage, but on being cut through a good-sized flower head was discovered, much resembling a good head of sprouting Broccoli enclosed, so to speak, in the heart of a Cabbage. When cooked it was found to be very good indeed, the heart imparting to the Cabbage portion a rather strong but perfectly agreeable Broccoli flavour. In all probability it may early in the season be made to do duty as a Cabbage and towards the spring as a Broccoli, and on account of its evident extreme hardiness must be very valuable for either purpose. The above remarks may appear to be a recantation of what I have previously written on this subject although not so intended, but are offered in the same spirit as those were—viz., with a desire to give an unprejudiced estimate of a new vegetable in a straightforward manner.—W. IGGULDEN.

THE vegetable bearing this compound designation is the result of a cross between a Cabbage and Broccoli, effected by Mr. Gilbert of Burghley, his aim being, as he says, to get the common Cabbage all winter. Outwardly the variety has precisely the ordinary appearance of a Cabbage, from which it differs when cut open in the miniature Broccoli that is found enveloped by the leaves. In the last week of March Mr. Gilbert sent me two of it to taste; they were each as large as and like a spring Cabbage when turned in, but not hard. When cooked every part was tender, succulent, and so delicious in flavour without the slightest taste of the offensive rankness so often perceptible in both its progenitors, that I could readily perceive why it had been awarded a first-class certificate. When it comes into general cultivation it will doubtless be in requisition the year round, and will prove a formidable rival to our best summer vegetables. But the fact of its hardiness and fitness for table at a season of the year when the garden affords so little variety is a matter for especial congratulation. I may add, upon Mr. Gilbert's authority, that it was left fully exposed to the severities of the past winter without a plant being either killed or crippled.—EDWARD LUCKHURST.

DARLINGTONIA CALIFORNICA.

THIS most interesting plant belongs to the *Sarracenia* family, and is the only species, the difference between the two genera being chiefly in the form of the stigma. The plant itself is, however, distinct from the *Sarracenia*s in appearance, although only to a limited extent in some instances. It is a native of California, growing in marshy places and by the sides of small streams. Most of the readers of the Journal are probably acquainted to some extent with the plant, and there is no reason why it should not be much more frequently met with. The pitchers grow from 6 to 18 inches high, more or less erect, hollow nearly the entire length from the root up to the top, gradually enlarging towards the apex, where it is formed into a sac varying according to the size of the leaf; sometimes it is as large as a hen's egg of a brownish colour. The true lamina of the leaf is produced at the end of this sac in the form of two spreading lobes, usually lance-shaped. The above brief description will suffice for my purpose, as I chiefly wish to draw attention to its hardiness. I have grown it in a cold frame for some time and found it succeed well. At Mr. Parker's nursery at Tooting there is one planted out by the side of a small watercourse among grass and weeds, and it has been in that position to my knowledge for at least two years with only the protection of a small handlight, and it has stood without the least apparent injury the late severe winter. This should be sufficient to induce our hardy plant-growers to try it, giving it a damp and shady place in the rockery or fernery, keeping it well supplied with water, and planting it in a boggy soil composed of peat and sphagnum chopped up, with plenty of sharp sand and small pieces of limestone mixed in. All that is then necessary is a slight covering in the form of a hand or bell glass; the former is preferable, as ventilation can be more advantageously provided than with a bellglass.

The price hitherto probably has prevented many from purchasing it, but it is not now expensive, and I also notice that seed is offered at a moderate price. Now in most cases it is more than probable, where seed of this plant has been sown, no more has been seen of either seed or young plants. The reason is easily understood, since in quite as many instances it is equally probable the seed did not receive proper treatment.

I have known persons to be supplied with seed and failed to obtain any young plants, while from the same stock of seeds I succeeded in raising a batch of healthy seedlings. By the following simple means I have raised more than one batch of young plants. Pots were filled with fibrous peat, charcoal, fresh chopped sphagnum and sand in equal parts, filled within an inch of the top, then coated with fresh tips of sphagnum, upon which the seed was sprinkled and well watered, and the



WIG. SMITH

Fig. 43.—DARLINGTONIA CALIFORNICA.

pots placed in pans of water and covered with a piece of glass or a bellglass so as to keep the atmosphere above the seeds in a moist condition. The pots were placed in a shady place in a cool greenhouse, and in about five or six weeks the seed commenced to germinate, and the young plants readily

grew. When they were strong enough they were pricked off in pans of the same soil well drained (as the pots must also be), coated with fresh-growing sphagnum, which should be pressed firmly round the plants, as they have such small rootlets that it is very beneficial. The pans were placed in a

shady cold frame, kept very close and constantly kept moist, and the young plants made good progress. They are potted on as they require, first into small pots, employing the same kind of soil, and always facing the soil with fresh moss, which keeps the roots cool and damp. Perfect drainage with such soil as described above, with a cool and shady position, is all this plant requires to flourish. Some growers give it a considerable amount of heat, but that is unnecessary, as it is quite amenable to cultivation without it. Considerable interest from a scientific point of consideration centres in the plant as well as in the other members of the family, owing to

the power of the peculiar hairs lining the inside of the pitcher to produce a juice which is considered capable of dissolving animal substances.—T.

AUTUMN PEARS—MARÉCHAL DE COUR.

NUMEROUS as are the Pears ripening during October and November, and good as many of them undoubtedly are, yet the variety now figured is certainly one of the best. It is not nearly so extensively cultivated as some other popular Pears, and on this account it is the more needful to thus prominently

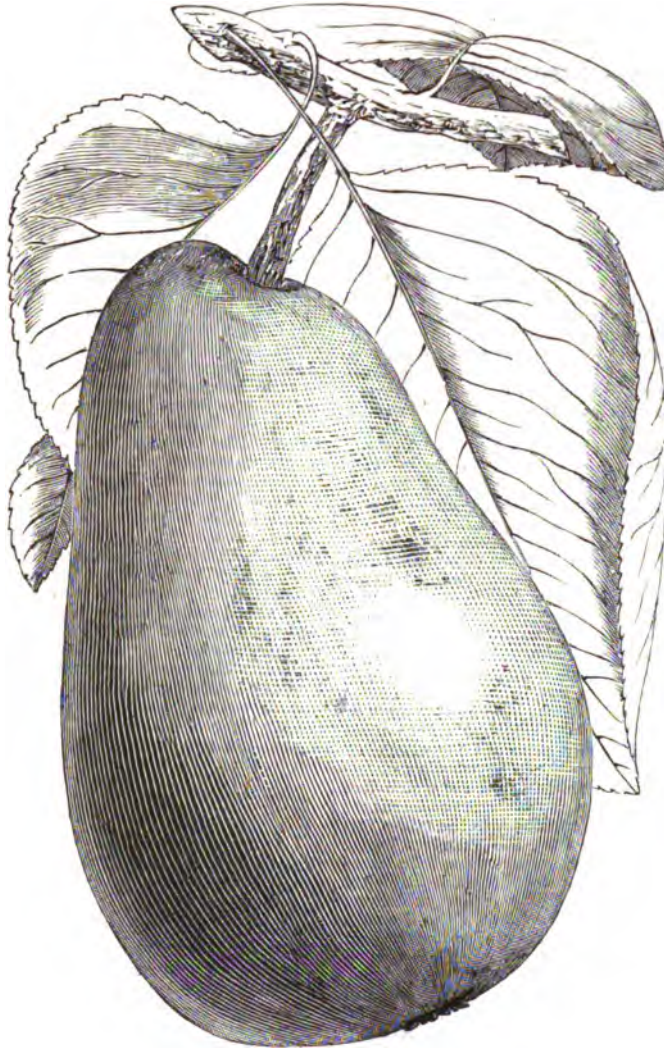


Fig. 44.—MARÉCHAL DE COUR.

direct attention to its merits. The tree is a free and healthy grower on the Quince stock and is vigorous on the Pear. On the latter stock orchard standard trees produce excellent fruit in favourable situations, and some of the finest Pears we have ever seen were produced by a standard tree trained to a wall in one of the midland counties. It is equally well adapted for espaliers and pyramids over probably a wide district of the country, for the tree is hardy and a good bearer. Our experience, however, has been chiefly gained from trees in the south, and the experience of others in different localities cannot fail to be useful to many who contemplate planting Pears of proved repute. The variety under notice was raised by Dr. Van Mons, and distributed by M. Bivort under the name of *Conseiller de la Cour*. Under this name it was described in early editions of the "Fruit Manual," and the name is still retained in many trade catalogues; but as the name now adopted was originally given it by the raiser it is the proper

one, and should be employed by all vendors of trees. Our engraving is of a fruit grown by Mr. Haycock at Barham Court during the unfavourable season of 1879, and is a truthful representation of an excellent Pear; but larger specimens are produced during warmer summers.

VIOLETS.

VIOLETS are such general favourites that to urge their more extensive cultivation would appear superfluous; yet as this is the season for making nursery beds of them to afford a supply for next winter, I may usefully draw attention to their value for planting in the borders among other plants in corridors and conservatories. I am accustomed to fill a broad shelf with them along the front of a Peach house about 130 feet long, and the delicious perfume of the flowers makes this a delightful promenade on a winter's day. No pots are used, but the plants

are lifted with balls of soil and crowded together as thickly as possible upon the shelf. I prefer the old Russian for this purpose, from the earliness of its flowering in autumn and its abundant blossom throughout winter. I agree with Mr. Abbey in the greater value of the larger flowers for bouquets, especially when drawn up somewhat under glass, for then the flower stalks are often 6 inches long, enabling us to make huge bouquets suitable for a large centre table. *Victoria Regina* proves to be so robust and makes suckers so freely that I hope soon to have a large stock of it. I much fear the four or five plants of *De Parme* which I have cannot be the right sort, for they are weakly and not at all answering to Mr. Abbey's tempting description.—EDWARD LUCKHURST.

THE ROYAL CALEDONIAN HORTICULTURAL SOCIETY'S SPRING SHOW.

THE above Show was held in the spacious Waverley Market at Edinburgh on the 7th and 8th of April, and was in all respects the finest yet held under the auspices of the Society. The prize list has been extended, and in some of the chief classes the prizes augmented very considerably. There were in all 121 classes in the schedule, the number of entries being 550, a very high average when it is borne in mind that there was scarcely any competition in the classes open to the trade growers. For *Hyalanthus* alone there were twenty-nine entries, for *Lily of the Valley* twenty-six entries, for *Orchids* twenty entries, besides many others which were strongly represented. The competition in the fruit and vegetable sections was very slight, some remarkably fine fruit of a new Strawberry named *Bothwell Seedling* being exhibited by Mr. T. Chisholm, Bothwell, being the only exhibit calling for remark. The cut flower section was, with the exception of bouquets, also rather poorly filled. Messrs. Todd & Co., Edinburgh, and Mr. G. MacIure, Trinity, showed very artistic examples of these and carried off the chief prizes. A box of particularly fine *Marechal Niel* Roses were staged by Mr. Gordon, gardener to Major Wauchope, Niddrie. Another notable exhibit was a stand of twenty-four *Rhododendron* trusses grown in the open air at Bridge of Allan, and exhibited by their owner, Dr. Patterson.

The general arrangement of the plants was much the same as at previous shows, the Lawson Seed and Nursery Company filling the west end of the market with a series of beds of hardy Conifers and others of stove and greenhouse foliage plants. The remainder of the plants were on tables. There is a strong feeling prevailing in favour of dispensing with tables altogether, the above Company having shown conclusively that a much better effect can be obtained by arranging plants in groups on the floor of the Market. One new feature, which was certainly one of the prettiest and most engaging, was obtained by a series of triangular tables against the pillars at the south side of the Market; these were filled with spring-flowering plants arranged for effect. A little dispute arose over these owing to the loose wording of the schedule, most of the competitors employing plants which had been brought on under glass, disqualification being the consequence of so reading the schedule. Turning from these to the tables furnished by nurserymen and market growers, the grandest by far was that of Messrs. Downie & Laird, the enormous specimens of *Rhododendrons* with which the centre of the table was furnished quite overshadowing the less bulky produce of other exhibitors. The *Rhododendrons* represented were Broughtoni, John Downie, Minnie, Joseph Whitworth, Regalia, Countess of Haddington, and Madame Milano Carvalho. The remainder of the table was occupied with smaller *Rhododendrons*, *Azaleas*, *Cyclamens*, and *Ferns*. The most striking features in the stand of Messrs. J. Methven and Sons were the well-bloomed bushes of *Rhododendrons*, some good specimen *Palms*, a rich display of *Pelargoniums*, and *Azaleas*. Messrs. Dicksons & Co., Waterloo Place, had some large Tree *Ferns* and a fine display of alpine and other spring-flowering plants.

Of an entirely different style was the table furnished by Messrs. Ireland & Thomson, of the Craigleith Nurseries. Here were large specimen *Crotons*, *Dracenas*, and *Azaleas*; a fine plant of a seedling *Rhododendron* of the Sikkim type named Countess of Dalkeith, to which a first-class certificate was awarded—the flowers are large and of the clearest white; smaller plants of the finest and newer fine-foliage plants, with dwarf *Azaleas*, *Cyclamens*, a large number of *Hyalanthus*, and such popular *Orchids* as *Odontoglossum Alexandræ*, *O. cirrhosum*, and *O. Halli*; *Dendrobium Bensoniæ*, *D. chrysotoxum*; *Cypripedium Boxalli*, *C. villosum*, and *C. hirsutissimum*. Mr. Robertson Munro of Portobello contributed a table of hardy plants, in which amongst others were *Primula rosea*, *P. denticulata*, a new variety named *P. ciliata* Lindesay, a very large deep purple flower, to which a first-class certificate was awarded. It was raised by Mr. Lindsay of the Botanic Gardens, Edinburgh, from a seedling of the late Mr. McNab named *P. c. purpurea*. *Omphalodes verna alba*; *Scilla taurica*, a very fine species, darker in colour and larger in all its parts than *S. bifolia*; *Anemone Robinsoniana*, pale lilac; and a

well-bloomed potful of *Andromeda tetragona* were other plants noted in this interesting group. At the east end of the market, the market growers were represented by Messrs. W. Thomson and Sons, Clovenfords, and Mr. Taylor, Leith, both of whom had very fine representative groups. The competitive collections of *Hyalanthus* attracted much attention. Mr. Cowe of the Metropolitan Cemetery Company, carried off the highest honours and the seven-guinea prize with eighteen very handsome plants. *Koh-i-noor*, *Mont Blanc*, *La Grandesse*, *Marie*, *King of the Blues*, *Seraphine*, *Lord Derby*, *Vuurbaak*, *De Candolle*, and *Fabiola* were the best in the first and second-prize collections. Passing a group of large *Deutzias* and some fine specimen *Ferns* the *Orchids* next attracted our attention, perhaps the most noteworthy being those shown by Dr. Patterson. These comprised an immense specimen of *Vanda tricolor* *Pattersonianum* with nine spikes, a very large plant of *Chysis bracteosa* with five spikes, a fine variety of *Cymbidium Lowi*, *Vanda suavis*, *Pleione tricolor* with seven blooms, *Dendrobium Findlayanum*, a new *Odontoglossum* of the *Alexandræ* type but not yet named, and others. He also exhibited a large *Anthurium Schertzerianum* 6½ feet across, and a good plant of the white variety *Williamsi*. Other *Orchids* demanding notice were *Lycaste Skinneri* alba with five blooms, and a *Cypripedium villosum* 4 feet across from the Braxfield collection. Mr. A. Paul showed in his first-prize collection a good made-up pan of *Masdevallia Harryana*. Mr. Henderson, Gracemon, exhibited a flowering plant of *Benanthera coccinea*. *Dendrobium thyrsiflorum*, *D. lituiflorum*, and *D. Pierardi* were also well represented.

In the classes for stove and greenhouse plants Mr. J. Patterson, Millbank, staged an enormous specimen of *Pultenaea subulnatum* at least 6 feet through, and *Erica Cavendishiana* nearly as large, and extra fine plants of *Erica Lindleyana*, *Anthurium Schertzerianum*, besides *Azaleas* and other *Heaths* in the finest condition. *Tulips*, *Narcissuses*, *Rhododendrons*, *Roses*, table plants, and *Spiræas* have to be passed without notice. *Auriculas* were shown in large numbers, but only one firm had plants worthy of mention. These were from Messrs. Dickson & Son, Hanover Street. The individual pipes were not large, but the plants as a whole were very well shown indeed. The varieties were *Miss Gidding*, *Alderman Wisbey*, *Col. Champneys*, *Rev. G. Jeans*, *C. J. Parry*, and *Prince Alfred* stage flowers, and *Diadem*, *Mrs. Llewellyn*, *Napoleon*, *Nat. Norman*, and *Elcho* in *Alpines*. The only other feature we will mention were the first and second prize groups of plants. Mr. Preest, gardener to the Marquis of Lothian, was first with a very bright and effective group, but rather deficient in foliage plants. Good plants of *Phalænopsis amabilis*, *P. Schilleriana*, and *Masdevallia Lindenii* were conspicuous. *Odontoglossum Halli*, *O. Pescatorei*, *Phaius Wallichii*, and *Vanda insignis* were also well represented. Mr. G. Reid, gardener to G. Bertram, Esq., was second. This group was remarkable for fine *Crotons*, *Pandanus*, *Todeas*, *Anectochilus*, *Bertolonias*, but contained comparatively few flowering plants. In addition to the plants mentioned as having been awarded certificates Mr. Young obtained similar honours for two or three *Auriculas*, and Mr. Garrett, gardener to Mr. Balfour, Whittinghame, for *Amaryllis* *Miss Balfour*.

ROSES.

I ALWAYS read with interest the contributions which from time to time appear in the Journal from the pen of your correspondent Mr. Wm. Taylor, but he must forgive me if I for once differ from him regarding his remarks under the above heading in your impression of the 1st instant. Mr. Taylor commences by saying he is acquainted with only one Rose, *Teas* and *Chinas* excepted, which is worthy of being called a garden Rose, and this fortunate flower he describes as a "pink climbing cluster Rose," with which I am unfamiliar. But where, I would ask, are we to put *La France*, *Marie Baumann*, *Charles Lefebvre*, *Annie Wood*, *Caroline de Sansal*, *Beauty of Waltham*, and a glorious company of charming varieties I could name, if they are to be excluded from our gardens as not worthy a place? Your correspondent is also evidently not favourable to exhibitions, but much as I should like to say in support of them, I will now only state that in one particular I agree with him. I think the magnificent monster plants in pots, which require a waggon and horses to convey one of them to the place of exhibition, are undoubtedly charming and deserve all praise for their skilful cultivation, but I consider that a collection of well-grown plants in 8 or 9-inch pots would appeal far more practically and personally to visitors and amateurs. I can follow their thoughts if not words—"I can surely manage to accomplish this; I have but to get the plants and take pains with them," but the grand giants which they contemplate with amazement and admiration they would never dream of attempting to emulate. I was not aware that perfume was "despised on the exhibition table," and always regard it as one of the most important features in judging a Rose, witness the premier plant *La France*. Mr. Taylor

deprecates Capitaine Christy. I regard it as a most important and valuable introduction amongst the comparatively few really good light-coloured Roses, especially for pot culture. With regard to the propagation of Roses, a very simple and easy method is to insert cuttings about 8 inches in length in sandy soil under a north wall in September.

There is surely small occasion to have only "bare sticks and heaps of farmyard manure" in the month of August. We do not care for standards here, and entirely agree with the champion amateur, Mr. Baker of Exeter, who with all his advantages of soil and situation grows dwarf Roses only. But if standards are grown and the soil is well manured in late autumn or winter, and the manure forked-in by the spring, Mignonette, Heliotrope, Nemophila, and a host of dwarf and beautiful plants may be readily made to cover the ground, or if the trees are on lawns the circle of earth round the stems may be mulched with cocoa-nut dust, which has a neat and unobjectionable appearance.

I regret that Mr. Taylor considers that Rose culture is on the decrease. My own experience, and I think the trade will endorse it, is that the extreme reverse is the case. The popular writings of many rosarians have done much to stimulate and foster the taste for and cultivation of our national flower, not alone in our own land, but all over the world.

The patient skill and practical intelligence that has been brought to bear upon this most interesting pursuit has borne good fruit already, and who shall say what may not be in store for us in the future? Has not Mr. Henry Bennett recently opened a mine of wealth in his new hybrid pedigree Roses? Surely we are not retrograding.—G. DUFFIELD, *Winchmore Hill*.

SEA SAND.

ON page 284 of last week's issue you invite communications from those who have proved fresh sea sand when repeatedly washed and dried to be deleterious. I am not writing as one who has found sea sand at all injurious to plants or cuttings, my experience proving the contrary. The sand left by the tide on the beach of the Mersey is much coarser and sharper in some places than others; this I select for potting purposes in preference to the fine. No washing or any preparation whatever is practised, the sand being used in the same condition as collected, though its nature here is such that it rapidly dries. I send you a fair sample in the same condition as I use it for potting purposes, though of course the finer is preferable for propagating. So far from being injurious the plants seem to luxuriate in it. As illustrating this, we have now a vigorous specimen of *Adiantum formosum*, 4 feet in diameter, which less than twelve months ago was a very small plant in a 3-inch pot. In no case have I noticed the least injury resulting from the use of sea sand. I am of opinion that good river or road sand is preferable to silver sand for pot plants generally. Perhaps, however, exception may be taken to very fine-rooted plants, such as *Ericas* and *Azaleas*. It would be interesting to have the experience of your old correspondents on this subject.—A. R. COX, *St. Michael's Hamlet, Liverpool*.

[The sand is clean, sharp, and good; it is well adapted for potting purposes, and, if sifted, for propagating.—EDS.]

MONS. SOUCHET.

THOSE of the readers of the Journal who have perused my "French Notes" this year will not be astonished to hear of the death of my amiable and much-esteemed friend Mons. Souchet of Fontainebleau, and I am sure that there is no one who has ever had the pleasure of meeting him but will look back with thoughts of kindness to the cheery and genial friend whom we shall not meet again; but his life, especially in later years, had been one of such great suffering and discomfort that feelings of sorrow will hardly find a place in the thoughts of him.

Formerly Jardinier-en-Chef of the Château at Fontainebleau he had, in spite of many disadvantages, made it, especially the Jardin Anglais, a delight to the many visitors who every summer found their way there. But he will ever be remembered by the marvellous impulse he gave to the *Gladiolus*; in fact, he may be said to have created it as a garden flower. Mons. Courant, who at that time lived at Fontainebleau (I suppose forty years ago), began also, and raised *Couranti fulgens* and some others; but M. Souchet carried the work on with the greatest energy, and in looking through the lists of *Gladioli* we may see that all the varieties of merit owe their origin to

his efforts or those of his successors. To his example, too, we owe the efforts of Mr. Kelway in our own country, whose flowers are rivaling those of the French growers.

About eleven years ago M. Souchet resigned his position at the Château, and retired to a very handsome villa he had built in Fontainebleau, and there, with his excellent wife, he passed the remainder of his days. During the Franco-Prussian war his house was occupied by German officers, who were treated by Madame Souchet with the utmost courtesy, and who returned it with much good feeling and taste. When I saw him in September he was then suffering greatly, and the accounts I had from time to time quite led me to believe that I should never see him again. My anticipations were correct, and at the age of 68 he has passed away, leaving no family, but lamented by many friends, for a more amiable, kind, and tender-hearted man never lived.—D., *Deal*.

THE DAFFODIL.

[Lecture delivered by Mr. Shirley Hibberd at the Royal Horticultural Society.]

THE collective term Daffodil, which, in rural districts easily expanded into Daffadowndilly, was a corruption of *Asphodel*, the flower the ancient Greeks devoted to the dead. The old French form of the word was *Affrodille*, and the initial D attached itself as a proper remainder of the preposition in the French *fleur d'affrodille*.

Daffodils are often referred to as Lilies, and one of our old English names for the large yellow trumpet section is *Lent Lilies*, which refers of course to their seasons of flowering. The poets have hailed them as amongst the most delightful flowers of the spring, prefiguring in their golden splendour the sunshine of the summer and the profusion of its fruits. Most fresh and fragrant are the allusions to them in the older poets, who have drawn their inspiration from the fields and woods. In Broome's "*Daphnis*" we read—

"The joyous spring draws nigh! Ambrosial showers
Unbind the earth, the earth unbinds the flowers,
The flowers blow sweet, the Daffodils unfold
The spreading glories of their blooming gold."

The Daffodils may be said to comprise the whole of the *Narcissi* family, but John Parkinson warns us that there be true and false Daffodils, and at page 67 he gives the rule to distinguish them. "Now to cause you to understand," he says, "the difference between a true Daffodil and a false is this, it consisteth only in the flower (when, as in all other parts, they cannot be distinguished) and chiefly in the middle cup or chalice; for that we do in a manner only account those to be *Pseudonarcissos*, bastard Daffodils, whose middle cup is altogether as long, and sometimes a little longer, than the outer leaves that do encompass it, so that it seemeth rather like a trunk or long nose, than a cup or chalice, such as almost all the *Narcissi* or true Daffodils have."

Thus the *Narcissi* are brought before us as Daffodils of two sorts, the true and the false, the classification so far resting on the relative length of the trumpet, cup, or crown to the sepals and petals, or, as we say to look learned, the perianth segments that encompass it.

The *Narcissus* takes its name from a blooming youth, son of Cephissus, who, being beloved by Echo and a crowd of nymphs, turned aside to make love to his own shadow in the fountain, and achieved immortality by meeting death in the sparkling stream. From his delicate corse sprang the beautiful flower which for ever wears around its heart a blood-stained girdle of remembrance. It is the fair white flower with ruddy annulus, known by distinction as the Poet's *Narciss*, or *Narcissus poeticus*, that represents the story, although Ovid, who gives it in detail in the third book of his "*Metamorphoses*," certainly does suggest that it might be a yellow flower, and a veritable *Asphodel*. But we must not be too particular about the flowers that figure in ancient fables, or we shall be soon lost in a maze of speculations. The best summary of the story I have met with is in the delightful "*History of Plants*" by Rembertus Dodonæus, who, at page 211 of Lyte's translation, thus delivers himself:—"These flowers took their name of the noble youth *Narcissus*, who, being much desyred of many brave ladies, bycause of his passing beantie, he regarded them not: wherefore being desyrous to be delivred fro their importunate sutes and requestes, he went a hunting, and being thirstie came to a fountain, in which when he would have drunken sawe his own fauour and passing beantie, the whiche before that time he had neuer seene, and thinking it had bene one of the amorus Ladyes that loued him, he was so rapt with the loue of himself, that he desyred to kiase and embrace himself, and when he could not take hold of his owne shadow or figure, he dyed at last by extreme force of loue. In whose honour and perpetuall remembrance, the earth (as the Poetes fayne) brought forth this delectable and sweete smelling flower."

This brings us to the books, and there is no flower more famous in the books than the Daffodil. Dodeons describes four, and

intimates his knowledge of other kinds, certain of which, he says, "whose garland or circle in the middle of the flowers is white, be very rare and daintie." In the great work of Gerarde, published 1577, there are fifteen true Daffodils described, and at page 186 he adds a few *Pancratiums* as Daffodils, which after all is not a great violation of propriety. In Johnson's edition of Gerarde, published 1688, there are thirty-one Daffodils described. In Parkinson's "*Paradiſus*" the number mounts up to ninety-four, but a certain few of these—say half a dozen—are not Daffodils. So important to the collector of these flowers is this delightful old book that he considers the first requisite to perfect enjoyment of his pets is to commit to memory the forty-four folio pages devoted to them, and his next step towards happiness is to make the words fit to any tune that may be forced upon his hearing in a world where Daffodils are understood only by a most select company of incurable madmen. I invite your attention and hope to win your admiration for a copy of John Parkinson, which I believe to be the most beautiful in existence, but being mad upon this subject perhaps I overrate its perfection. Amongst later writers on the subject, Salisbury, Haworth, and Herbert are full of importance, but I must commend to you the useful work of Mr. Burbidge on the *Narcissus*, published a few years since, as a storehouse of accurate information, illustrated with attractive and truthful pictures of about sixty of the most distinctive kinds.

There are in cultivation at least 150 named species and varieties of *Narcissus*, and Mr. Barr, one of the most active of the *Narcissomaniacs*, has an immense collection of seedlings for the enrichment of our collections, so that it may be safely said the next generation will have command of over two hundred varieties of these delightful, useful, seasonable, glorious flowers. And shall I tell you what will appear to many as a flight of fancy, but is in truth a sober but most interesting fact? Every one of these has a history! Yes, in every good garden of Daffodils there are two hundred histories represented by beautiful flowers; and the great garland, if we may call it such, is dotted and spangled and bound together with the experiences and speculations of curious students, experienced travellers, and enthusiasts of such irrepressible vitality that death alone is able to subdue them. And we may even suppose them after death carrying their love of God's work into the sunny prairies where the imperishable *Asphodels* expand their golden chalices filled with the waters of eternal life—where there is none of that contention about classification and nomenclature that results from our incapacity to understand the simplest flowers that bloom at our feet.

But these flowers, if we speak by comparison, are not so simple as they may appear. I will briefly direct your attention to one amongst a thousand problems they compel us to consider. You will observe that the centre of every true *Narcissus* is occupied with a trumpet, a chalice, a cup, a saucer, a discus, call it what you will: the botanist calls it a crown or corona. Now, what is the corona? To this question no one living is competent to make reply: it seems as if Nature had crowned these flowers with the double purpose of exalting them and humbling the botanist. There are six divisions in the perianth, and these we may regard as consisting of three sepals embracing three petals. Then how comes the corona here? In some of the old books it is called the nectary, which is certainly not a bad guess, but it does not satisfy the severe morphologists. In the "*Journal of Botany*" for April 1865, will be found a learned paper on the subject by Dr. Maxwell Masters, who is inclined to regard the corona as the result of a combination of two rows of modified anthers. In the issue of the same work for May, 1866, is a paper on the subject by Mr. Worthington G. Smith, who regards the corona as the result of confluent petal-stipules. But the *Narcissus* is by no means alone in its possession of a mysterious corona. Of the 110 genera of *Amarylids* there are forty-two genera equally privileged, and we have peculiarly interesting examples in *Pancratium*, *Ismene*, *Hymenocallis*, and that exquisite Daffodil of the fertile fields watered by the mighty Amazon, the *Eucharis amazonica*, in which the faithful may behold the flowery emblem of the silvery chalice of the Lord's house, and Parkinson himself would have described it as he described the chalice of the incomparable Daffodil, saying, "The cup doth very well resemble the chalice that in former days with vs, and beyond the Seas is still used to hold the Sacramental Wine." Nature has balanced the two hemispheres fairly with flowers of this kind, and if we suppose her object to be to prevent the disturbance of its equilibrium we shall perhaps be as near the truth as at the seeming end of the speculations of our ambitious but superficial philosophy.

Another and a very great problem the Daffodils propose to us is, How shall we classify them? The student may make choice of many systems or may frame one of his own; but a perfect system is not to be hoped for, Nature herself having sternly set her face against it. And the reason of this is that throughout the family the gradations of structure and proportion are so minute that from time to time our labours fail because we cannot discover dividing lines. It is the difficulty of defining distinctive characteristics that stands sheer in the way of scientific classification. Let us, for example, take the system founded on the relative length of the corona; a system contemplated by Parkinson in 1629 and adopted

by Mr. Baker in 1869. Here we find two forms of the self-same species, *Calathinus* and *Triandrus*, put into separate classes, an error which admits of correction certainly, but for the present purpose serves to illustrate the problem before us. I have myself classified these flowers according to the number of flowers produced on a stem, and the system is absolutely perfect, until—yes, until it breaks down in the presence of a plant that converts all my wisdom into foolishness by producing one or two flowers more than it ought. We know just enough to be kept in fear that Nature will some day shatter all our plans by putting the angles where the curves ought to be, and causing two and two to count as five. If we attempt to classify by colour, in order to evade the difficulties arising out of form, we are no better off. Take, for example, the Poet's *Narcissus*, which should be single-flowered and white, with a sanguineous centre. What shall we say of Bicolor, which has two flowers and a yellow centre? And, again, what shall we say of *Gracilis*, which has two or even three flowers, and is wholly yellow? These two unmanageable beauties are so nearly allied to poeticus that separation, which at the first blush appears easy, proves at last to be impossible. If the varieties in their delicate gradations bring the species near together, and thus perplex us, we are not the less perplexed by the variations of the varieties themselves. Take the double *Telemonius* for example. It is sometimes destitute of a corona, forming a closely-packed rosette; at other times it is double within the tube only, and occasionally it shows a perfectly single flower. In its best state, when newly imported, it demonstrates the capabilities of its native Italian clime. In its worst state, as an old-established garden flower, it gives striking indications of the deficiencies of the sub-arctic variety to which it has been transported. There is a diminutive variety of the Poet's *Narcissus* called *Verbanensis*. It was known to Parkinson, and is by him described at page 87 of the "*Paradiſus*." He had not the least suspicion of its relation to poeticus, which was discovered two hundred years afterwards, and you will find it properly placed at page 818 of the noble essay on *Amarylids* of the Honourable and Reverend Dean Herbert. But this example is full of encouragement, because, if at the end of every two centuries a difficulty is disposed of, the whole catalogue of difficulties, which for the sake of argument we will estimate as numbering five hundred, will be all cleared off in a thousand years, and therefore the student of Daffodils is by no means tied up to a forlorn hope. The fact is we are perpetually endeavouring to catch Nature in a net and make her endless curves and inextricable windings conform to our narrow ideal geometry of straight lines and sharp angles. Our perceptions are finite, and Nature's capacity of production is infinite, and so in the search after knowledge we encounter difficulties at every step. I am reminded of a remarkable rockwork that I once admired with such demonstration of enthusiasm, that the artist who constructed it asked me what feature of the work pleased me most. I replied that the entire scheme in its completeness and unity gave me great delight, because it was utterly unlike anything in Nature, and in fact was an impossibility. "Ah," said he, "but my notions are my own; in my opinion that is how rocks should be formed; in these matters we have got beyond Nature." But the student of Daffodils will have to follow Nature, even if while toiling along the pleasant ways of truth he be always a thousand years in arrear of the knowledge that has never been concealed. Permit me to tell you another anecdote, which I think also illustrates the case of *Verbanensis*. There is a Daffodil described and figured by Parkinson as *Pseudonarcissus anglicus flore-pleno*, or "Gerarde's double Daffodil." For twenty years I sought and sighed to possess this plant, and in the season of Daffodils haunted gardens everywhere in search of it, but all in vain. But in the spring of 1875, while pottering about the garden making notes on *Narcissi*, I cast my eyes in a casual way upon the adjoining meadow, and at a considerable distance descried a tuft of yellow flowers. Calling the gardener, Tippets, I said, "William, go across the meadow and see what is that yellow flower yonder." "Oh," he said with perfect confidence, "no need to go; that's only a Dandelion." But my florist's eye, in "a fine frenzy rolling," was not so easily satisfied; so I went myself, and discovered in my own domain, where I thought I knew every weed as a member of my family, a fine clump of the veritable "Gerarde's double Daffodil," and I dug it up and brought it into the garden, and it lives and thrives to this day. Thus we may travel round the world in search of the very flowers that we left blooming on our own doorstep, for knowledge, like charity, begins at home.

Now, in conclusion, I will ask you why the Daffodils should so deeply interest us and fill so many big books? As a matter of course, as a learned lecturer, I must answer the question myself. It is not because of their beauty, or their hardness, or their association with the opening spring. All these considerations contribute to their popularity because they contribute to their usefulness. The great secret of their hold on our affections is that they carry within their charmingly chiselled chalices not only the wine of a new life and a refreshment that is incapable of exhaustion—besides these passports to our affection, these flowers possess in a peculiar manner the interest of human life in their habits and histories. The story begins with the beautiful youth who is

represented as ridiculously innocent, and it then runs through the minds and hearts of many generations of philosophers, and comes to us at last loaded with grave questions the philosophers were gravelled by. Thus the blooming boy whom Death swallowed as the punishment of his vanity becomes a high priest for ever in the temple of Flora, and I conclude this hasty and fragmentary address by saying that, boy as he is, I as one of the learned elders desire now and here to pay respectful homage to his pretty name of Narcissus.

WORK FOR THE WEEK.

KITCHEN GARDEN.

WHERE seedling plants are just appearing above the ground attention will be needed to prevent injury by predatory vermin. Slugs are most destructive, being especially fond of Lettuces and Brassicas. Sparrows are also very injurious. To prevent the ravages of the latter dust the plants over with dry soot, and a little fresh-slaked lime sprinkled over them will destroy many slugs. To employ either advantageously apply it early in the morning whilst the plants are damp. A first sowing of Dwarf Kidney or French Beans should be made on a warm border. Osborn's Forcing, Negro, and Canadian Wonder are good varieties. Attend to the earthing-up and staking of Peas as they advance in growth, making a sowing of the main crop and late varieties, such as Dr. Maclean, Veitch's Perfection, and Ne Plus Ultra. Broad Beans should also be sown. Sow Lettuce seed every fortnight or three weeks, so as to secure an unbroken succession. Alexandra Cos is one of the best varieties. All the Year Round and Neapolitan are good Cabbage varieties. Radish seed likewise must be sown frequently to secure a regular supply, also sow Spinach at fortnightly intervals. As the rows of recently sown seeds become distinguishable take advantage of favourable weather to use the hoe lightly between them. Potato planting should be brought to a close as soon as possible. As soon as the early varieties appear above ground protection of some kind should be provided, such as litter, or failing that draw the soil over them to prevent injury to the tops by frost. Clear and prepare ground for Peas or early Celery. Basil and Sweet Marjoram may be sown upon a sheltered border; also Thyme, Sage, Savory, and other herbs. Divide Tarragon, and plant in rows about 18 inches apart. Slips of Sage, Thyme, &c., should now be inserted, and the herb ground generally should receive attention, making good any deficiencies, and providing for future requirements by division of the plants or sowing seed.

Forcing Department.—Tomatoes will require attention in stopping and tying. All laterals should be removed as they appear, keeping one stem only. When the plants have produced about five trusses of bloom stop the lead, and when the fruit is fairly set afford a good supply of liquid manure two or three times a week. Complete the planting-out of early crops of Lettuces from pits or frames, which will then be available for forwarding Tomatoes for planting out, also for Kidney Beans and Capsicums. Attend to former directions as regards ventilating pits and frames, and potting off seedling plants as may be required. Where very early Celery is in request the plants should now be strong in 4 or 6-inch pots, and may be planted out under handglasses, about four under each, the soil having previously been removed to the depth of a foot, and the hole filled up with 6 inches of decayed manure and 8 or 4 inches of soil. The plants should be kept moderately close for a few days, when air may be given more freely during favourable weather, but the glasses should be kept on and closed at night.

Mushroom Beds.—Those in bearing will now need sprinkling daily with tepid water, and any beds showing signs of exhaustion may be aided by a good watering with liquid manure at a temperature of about 100°. It will be necessary to make up successional beds without delay in some cooler and more airy situation than the Mushroom house, to insure a supply when the indoor produce will fail to be of use through the attacks of maggots. Sheds with a north aspect are sometimes resorted to, and if open the first beds may be formed there to succeed those in the Mushroom house; but for the summer supply a dry-sunny situation in the open is preferable. At this season of the year it is unnecessary to ferment the materials before making up the beds, but on a dry day shake out any crude stable litter, removing the long strawy portion, and if too moist spread it out rather thinly in the sun, turning over once in the day until it becomes moderately dry. A dry site being chosen make up the bed at once, or if there be danger of water settling about the manure a foundation must be formed of brushwood or faggot, and a good layer of litter. The bed should be made mound shape if in the open, or if formed against a wall it must slope down from it so as to allow heavy rains to drain away freely. It is important that the bed be made as solid as possible, the materials being placed together somewhat loosely, and when they ferment they will settle down, and they should then be well trodden and beaten firmly. Should the heat in the interior of the bed in the course of two or three days after being beaten down not exceed 90° the spawn may be inserted about 9 inches apart in holes 2 inches deep, firming the material

well. After spawning cover the bed with hay or fine straw rather thinly, doubling it in about a week's time, or when the internal heat is on the decline. In a fortnight the spawn will have run, when the bed should be covered with good fibrous loam evenly about 1½ inch deep, beating down firmly, and smoothing over with the back of the spade, so as to form one even unbroken surface. If the soil is not moist enough it must be watered so as to secure this, covering with the litter as before. It will be an advantage if a tarpaulin be available for placing over the bed during heavy showers or long-continued rains.

FRUIT HOUSES.

Peaches and Nectarines.—In the earliest house the fruit will now be swelling fast, and the thinning and tying-in of the shoots will have to be attended to, so as to give the fruit all the sun and air possible for the colouring process; and if the foliage is too much crowded round the fruit the removal or shortening of a few leaves will be an advantage. It is important that there be not the least trace of red spider, or if there be it will be necessary to thoroughly eradicate it by an insecticide, for when syringing is discontinued, as it must when the fruit commences ripening, the red spider will make headway rapidly and do great injury to the foliage, seriously impairing future prospects. The supply of water to the inside border will, when ripening commences, require to be gradually lessened, but there must not be such a diminution as to affect the foliage, and when the crop is ripening some netting stretched below the trees will be useful to catch any fruit that may drop. Continue to disbud the shoots in the late succession houses, thinning the fruit gradually, and any well advanced towards stoning may be thinned; but as last year's wood is not very ripe it is well to leave more than the requisite number desired for the crop to meet contingencies. The fruits retained should be those best situated on the shoots for receiving light and air. Continue to syringe the trees morning and afternoon to keep insect pests in check.

Cherry House.—When the stoning is complete the fruit will commence colouring, and if considered desirable the ripening may be accelerated by maintaining a higher temperature during the day, but where fine fruit is desired a little more time should be allowed for finishing. Continue the ventilation as before advised, so as to secure a free circulation of air through the house. When colouring commences syringing must be discontinued, or it will cause the cherries to crack and spoil their appearance and keeping qualities. The surface of the borders must be kept moist. Attend to stopping and tying-in the shoots as necessary. Supply trees in pots liberally with weak liquid manure. Plum trees, if there are any in the house, should be syringed every day, and if aphides appear destroy them by fumigation.

Figs.—The early forced trees will have the fruit rapidly advancing to maturity. Until indications of ripening appear the trees must be well syringed, and the roots freely supplied with water or liquid manure if necessary. There is little fear of overwatering trees in well-drained pots with plenty of roots, healthy foliage, and abundant fruit. When the fruit shows indication of ripening gradually reduce the moisture in the house, and maintain a constant circulation of warm air by ventilating liberally whenever the weather is favourable to improve the colour and quality of the fruit. The temperature as advised in our last calendar should be maintained. Proceed with the tying-in, thinning, and regulating the terminal shoots or those intended to form such, stopping the spurs at the fourth or fifth leaf, and the laterals from these at the first or second leaf.

PLANT HOUSES.

Stove.—The propagation of plants required for table, room, and hall decoration must now have attention. *Acalypha Macraefcana*, *A. macrophylla*, and *A. musaica* have bold massive leaves of varied rich red and chocolate tint; the plants are very effective for general decoration, and are readily raised from eyes or cuttings. The stems cut up into pieces below every eye may be inserted singly in small pots or several in a pot or pan, and the cuttings may be inserted singly in small pots in any open propagating material. The pots should be plunged in gentle bottom heat, where the cuttings will root in fifteen to twenty days, and the eyes in about the same time; the latter may then be shifted into 3-inch pots and the former into a size larger, being grown on in a stove temperature in loam and peat or leaf soil. With good treatment they will make fine table plants by autumn. *Crotons* will strike from cuttings in a much larger state than many plants and without losing their lower leaves, provided they are kept close and moist. Shoots 8 to 10 inches in length treated in that way, and when rooted encouraged to push growth, will make fine plants in a few months. The tops of *Aralia Veitchii*, *A. elegantissima*, and *A. reticulata* taken off 8 to 10 inches in length will strike if kept moist in brisk heat. The stems, except where very hard, may be made into cuttings of a couple of eyes, and should be inserted singly in sand in small pots, and the hard stems lower down will break. When the shoots are a few inches long take them off with a heel, inserting them singly in small pots in sand. The strongest roots can be made into cuttings about an inch long, and if inserted in sand and kept warm will make plants. *Terminalia elegans* may be treated similarly to the *Aralias*. *Cupania filicifolia* is a fine table plant. Old

plants that have become bare at the bottom if cut down will produce a number of shoots, which if taken off when about 4 inches long with a heel will strike in a moderately moist brisk heat. Dracænas are very suitable for decorative purposes. Any plants that have become too tall or naked in the stem should have the top taken off and placed in 4-inch pots in brisk heat. The stem may be cut into lengths an inch long and inserted in pans of sand. The old stools will break from the base and may be turned out of the pots, the lower part of the main root being removed, returning the stools to pots no larger than will hold the roots. Few plants are so useful in a small state as Palms, some of which should be obtained annually for growing on so as to take the place of those becoming too large. *Cocos Weddelliana*, *Areca rubra*, *A. lutescens*, *Demonorops fissus*, *Geonoma gracilis*, *Thrinax elegans*, *Phoenix reclinata*, *Rhapis flabelliformis* and variegata, *Euterpe edulis*, *Hyophorbe indica*, *Kentia australis*, and *Latania borbonica* are useful kinds.

Orchids.—East Indian Orchids will now for the most part be in a growing state, and will require the greatest amount of heat and moisture. Syringe the plants early in the morning and again in the afternoon of fine days, avoiding damping the flowers, especially of *Phalenopsis*, as if syringed indiscriminately they become spotted. Shading will be required, rolling up the blinds immediately all danger of the sun scorching the plants is past. A little ventilation will be necessary on fine days from about 9 A.M. to 4 P.M., and the temperature should be 65° to 70° at night and 80° by day. *Cattleyas* growing freely will require careful attention, and should be separated from those that have completed their growth, such as *Cattleya Mossiae*, *Lælia purpurata*, and others. Those in growth, such as *C. guttata*, *C. labiata*, *Lælia elegans*, and others, will require to be kept moist, those at rest being placed at the coolest end of the house. *Cattleya superba* should be grown on a block in the East India house, and must be thoroughly ripened as soon as the growth is completed, for if given too much moisture the young pseudobulbs are liable to decay. *Cattleya Aclandiae* and *C. citrina* succeed best on blocks, which should be frequently syringed, and the smaller *Lælias*—such as *L. præstans*, *L. furfuracea*, and *Cattleya bulbosa*, do best near the roof in a free circulation of air, and will not require so much water as many other Orchids. *Celoglyne cristata* starting into growth must be frequently syringed, and as soon as new roots push a good supply of water is necessary. *Barbierias* must be kept cool and damp, syringing two or three times a day in fine weather. *Cypripediums* must have plenty of water or the plants will suffer, particularly *C. caudatum*. Keep *Miltonias* shaded, and afford a good supply of water. *Lycastes* should be potted immediately the flowering is past, employing fibrous peat with plenty of drainage. Sponge the leaves frequently against scale, which is more quickly destroyed whilst young, and fumigate to destroy thrips.

TRADE CATALOGUE RECEIVED.

Edward Gillett, Southwick, Mass.—*List of Native American Plants and Shrubs.*

TO CORRESPONDENTS.

* * All correspondence should be directed either to "The Editors" or to "The Publisher." Letters addressed to Mr. Johnson or Dr. Hogg often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense.

BOOKS (C. B. W.).—A "Manual of Botanic Terms," by M. C. Cooke, price 3s. 6d., is published by Mr. David Bogue, 3, St. Martin's Place, Trafalgar Square, and will no doubt meet your requirements.

NIGHT-SCENTED STOCK (A. Cobb).—The plant you require is *Mathiola biocornis*, seeds of which can be obtained from any nurseryman.

ADVERTISING (E. H.).—The cost of an advertisement of sixty words and under is for goods offered for sale 3s. 6d., and 6d. for every additional twelve words.

CURIOSITIES OF GARDENING (Deodar).—It is impossible for anyone to answer your question without knowing the nature of the curiosities on which you seek information.

GRAPES RUSTED (J. L.).—As only one or two bunches are affected we cannot account for the injury. Rusting is caused by the bunches being rubbed, by a cold rush of air, by sudden and excessive evaporation, and by the fumes of strong fermenting materials placed in the vinery.

INSECTS ON PEACH TREES (N.).—By allowing the aphids to increase until the lower parts of the trees are nearly denuded of leaves, the few left being curled up, you have seriously erred. You will find great difficulty in inducing healthy growth now. Fumigating will not be effectual, as the smoke cannot reach the insects. As soft soap has failed to destroy the aphides try the remedy referred to by Mr. Abbey on page 280 of our last issue.

INSECTS ON FERNS (A. B. C.).—The weevil upon those sent is an *Otiorynchus*, and your only mode of eradicating it is by either shaking it from the plant or hand-picking. If it is confined to one plant we should report it, removing all the loose soil in which the weevils hide, and search assiduously for them amongst the stems of the Ferns. Perhaps a dressing of nicotine soap would have some effect in banishing the pest.

TOBACCO PAPER (Nicotine).—It is made by soaking coarse brown paper in what is known as tobaccoists' liquor, being a liquor expressed by them, and full of ammonia and the acrid oil of the tobacco plant; or it may be made by saturating the paper in a strong decoction of tobacco, with a table

spoonful of saltpetre added to each pint of the liquor to promote steady and regular combustion.

MARÉCHAL NIEL ROSE SPORTING (G. T.).—Although the flowers sent are dissimilar from those of the normal variety, inasmuch as they are more globular and paler in colour, they are not nearly so heavily tinted nor so fragrant as those sent to us by "A. P.," which were rich cream in colour, distinctly suffused with pink. Yours are yellow, only a shade less bright than usual with *Maréchal Niel*, and have only the faintest suspicion of rose on the outside of the petals.

AMARYLLIS AND JACOBÆA LILIES NOT FLOWERING (Puddle).—Keep the plants close to the glass in a stove temperature. Water them copiously, and when the pots are filled with roots give liquid manure occasionally, and syringe frequently. Continue this treatment until the growth is complete; then afford less water, yet keeping the soil moist, for they ought never to become quite dry at the roots. They will, if a good growth be made and well ripened, flower next year.

FORMING COMPOST (Idem).—To three parts of good strong loam add one part of manure and three parts of cocoa refuse, throwing them into a ridge-like heap in a sunny situation, and turn the heap over a few times during the summer in dry weather. With the addition of about one-sixth of sand it will be available for potting most kinds of plants.

PLANTING STRAKALE (Idem).—Plant one year-old plants in rows 2½ feet apart, inserting the plants in threes, in a triangle, 6 inches from crown to crown, and 2 feet distant from each other in the rows. Beyond removing weeds and flower stems they will not need any further attention, although liquid manure may be given freely in dry weather. They will afford tops for cutting in the following spring, which though purple in colour will be good when cooked, they being cut when about 6 inches long and close to the base, so as to retain all the leaves. To have the heads white or blanched they should be covered with pots or hurdles so as to leave an open space over the crown, and those should be covered with litter so as to exclude light, or if wanted early may be surrounded with fermenting materials.

POTTING CHRYSANTHEMUMS (Reader).—You may transfer the plants from the 8-inch pots in which they are growing into their blooming pots if these do not exceed 9 inches in diameter. If you wish to bloom the plants in 10 and 11-inch pots a preparatory shift into 7-inch pots would be advisable. Some of the finest blooms exhibited last year were produced by plants that had been shifted from 8-inch into the 8 and 9-inch pots in which they flowered. If you transfer to the blooming pots at once do not quite fill the pots with soil, but leave room for top-dressing. In placing plants in very large pots much care is necessary in watering until the roots have taken possession of the soil.

CAMELLIAS NOT FLOWERING (Flora).—We have seldom known such a scarcity of flowers on Camellias as this spring, especially on plants growing in borders. Such plants made much growth last year, which was not matured in consequence of the cold and wet summer and autumn. If you prune your plants they will make still stronger growth. You had better keep the border rather dry after the young growths are 4 or 5 inches long, but not so dry as to cause them to flag; they will then probably set buds freely, and you will have good blooms next year if the ensuing summer is favourable for the maturation of the wood. Pansies will thrive in a shaded rockery if the soil is good and kept constantly moist, but they will not succeed in a dry sunny position, or at least the flowering period will be short and the blooms small.

RHODODENDRONS AND AUSTRALIAN PLANTS (G. W. Foreman).—If the Rhododendrons are so greatly injured cut away all growths that do not appear likely to recover, and, providing the plants are in suitable soil and the weather proves favourable, active growth will soon commence. For the Australian plants you name the temperature of a greenhouse will be necessary in your latitude, as very few of them will survive a winter in the open air even in the south of England unless they be trained to the south aspect of a wall and protected in severe weather. The seeds should be sown in sandy peat, the pots being well drained and placed in a warm house over moderate bottom heat, supplying water carefully, and potting the young plants singly as soon as they are large enough, for they soon damp off when left crowded in the seed pans.

TEMPERATURE OF HOT-WATER PIPES (C. S.).—After a boiler has been worked for some time up to its full power, the water will at leaving the boiler have a temperature of 200° to 215°. The temperature of the water in the return pipe just before entering the boiler is from 160° to 180° after circulating through pipes 150 feet in length from the boiler, or with return 100 yards. A great deal depends on the distance the water has to travel after leaving the boiler. In an ordinary forced vinery 160° to 180° is quite hot enough for the pipes, and there will not be more than 10° difference between the flow and return pipes after the boiler has been at work a sufficient time. In some powerful boilers the water will leave it at 210° to 215°, and after traversing 300 feet of 4-inch enter it again at a diminution of temperature of about 12°, but it should be borne in mind that such boiler is probably only heating one-third or fourth of the piping it is capable of heating.

WEEVILS ON PEACH TREES (A. Gardener).—It is not the "Colorado beetle" as you fear, that is eating the leaves of your Peach trees, but an *Otiorynchus*. It is a most destructive pest and not easy to eradicate. Pursue perseveringly the mode you are adopting of searching for and catching the weevils at night. You may secure many by spreading a white sheet under the trees and sharply shaking the branches, but not all of the weevils will fall on the cloth, as they cling very closely. You may prevent many of them reaching the foliage by enveloping the stems of the trees with cotton wool and smearing it with tar as frequently as is needful. Remove, during the winter, the whole of the surface soil from the border to a good depth, and add fresh compost. By the means suggested you may succeed in exterminating the pest. It might be useful to syringe the trees occasionally with a strong decoction of quassia, so as to render the foliage distasteful to the weevils.

LASIANDBA MACRANTHA FLORIBUNDA (F.).—The following extract from our "Greenhouse Manual," which can be had post free from this office for 10d., will answer your question. It flowers from the points of the shoots, so that stopping must not be practised after June. Repot young plants in March and again in June. Old plants to be cut-in if straggling in habit, and after flowering, keeping rather close, moist, and shaded for a time, until they have been reported with shoots an inch or two long, and that reclose so as to secure a good growth. In winter keep them light and moderately airy, with moisture only to prevent flagging. It makes a good bush

or pyramid, and is very floriferous even in a young state. If the flowering parts are only shortened a little after flowering it soon makes a good specimen. Cuttings of half-ripened young shoots in summer, in sand over sandy peat, under a bellglass in a close frame and gentle heat. Fibrous sandy peat two parts, sandy turfy loam one part, and one part equal proportions of silver sand, pieces of charcoal, and broken pots, with good drainage. It may be had in flower during the winter and onwards through the early spring months, the plants thriving in a light and rather warm greenhouse. There is a tall shy-flowering form of *Lasiandra* that is often not worth the space it occupies.

DEUTZIA GRACILIS CULTURE (*Idem*).—Your plants did not flower because the growths were not matured. If young shoots are issuing from the base plentifully you had better cut out the old stems, and the young growths being matured will flower freely another year. Grow the plants on in a very light greenhouse, watering them copiously, and when the weather is genial place them in a sunny position out of doors, plunging the pots in ashes, and do not let the plants suffer by want of water. The growing shoots should not be stopped. If the plants are in very small pots they may need repotting; but it is not advisable to overpot, the removal of the surface soil, and a dressing of fresh loam, often answering equally well. They grow well in turfy loam.

GRAPES RUSTED (*E. S.*).—The rusty appearance of the berry sent, and the shrinking on one side of it, may be the result of air not being admitted sufficiently early in the morning. The specks on the leaves also suggest that the night temperature is too low, causing the foliage to be wet by condensation, and the action of the sun in a close house will cause the specks referred to, or the injury may have been caused by rank fermenting manure in the house. When the heat is permitted to rise considerably by the action of the sun, and then the ventilators are opened wide to lower the temperature, evaporation is so sudden and excessive as to do injury. The temperature of the house ought not to be below 60° at 5 P.M., and this with the top ventilators open about half an inch all night. As soon as the heat rises, and before it is 65°, the ventilation should be slightly increased, continuing admitting more air at intervals in advance of the increasing temperature, never admitting so much at a time as to cause the mercury of the thermometer to fall, but only to prevent it rising too rapidly. Continue this until the house reaches its maximum heat of 80° to 85°, then admit air by the front lights if necessary. Commence reducing the ventilation in the afternoon as soon as the temperature decreases, and continue reducing it until the house can be closed, so that the heat does not afterwards rise to more than 85°. The house should then be damped, according to the instructions that are frequently given in "Work for the Week." By carrying out the advice there given your crop will progress satisfactorily, provided the Vines are in good health.

CUCUMBERS NOT SWELLING (*J. C. Exell*).—As the plants are strong and the roots as healthy as you can desire, we do not think they are affected by the "disease," which appears in the form of nodosities on the roots which contain minute nematoid worms. Exudation from the fruit results from an excess of sap induced by the too rich food which the foliage and fruit cannot elaborate; and it is parted with by the fruit, also the young shoots and stems of the plants. It is common to very luxuriant plants when the night temperature is too low and damp. This also causes the tips of the fruit to decay. Cold water applied to the roots and too late closing of the house conduce to the same result. Diminish somewhat the supply of water, but not so as to cause the foliage to flag. Maintain a night temperature of 65° to 70°, a day temperature without sun of 75°, with sun 85° to 90°, and abundant ventilation. Shade slightly if the plants cannot endure bright sun, but the less shading the better, only employing it as the least of two evils, the greater being scorching. Close as early as possible so that the temperature does not afterwards rise to more than 90°, syringing and damping the house at the same time, but the plants, paths, &c., should be dry before nightfall. The minute portions of the leaves and fruit, and the shrivelled condition of the former on arrival, are not sufficient to enable anyone to form a satisfactory estimate of the real state of your plants.

NAMES OF FRUIT (*H. Hall*).—We regret to say we do not know the Apple.

NAMES OF PLANTS (*A. B. C.*).—The plant is a *Corydalis*, but the specimen was too withered to ascertain its specific name. (*E. Lee*).—The name of the Parrot Tulip is *Perfetta*, yellow, striped with green and tipped with scarlet. (*Horsham*).—*Hebeclinium lanthimum*. (*C. B. K.*).—1, *Scilla sibirica*; 2, *Muscari botryoides*; 3, *Asplenium falcatum*; 4, *Scilla bifolia* major; 5, *Asplenium longissimum*; 6, *Primula viscosa*; 7, *Begonia Ingrami*; 8, *Chrysanthemum frutescens* var. *Etoile d'Or*. (*Inquirer*).—*Dendrobium densiflorum* album. (*Young Gardener*).—1, *Onychium japonicum*; 2, *Cheilanthes formosa*. (*J. C. O.*).—*Calceolaria violacea*. (*A Nineteen-years Subscriber*).—The plant resembles *Habrothamnus elegans*. We cannot supply the volumes you require.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

CULTIVATION OF RAPE.

THIS useful and nutritious plant belongs to the genus *Brassica*, and comprises two varieties, the tall and the dwarf, and it is this habit of growth which makes all the difference in cultivation, and the object and purposes for which they are grown. If we were to speak of rape only without reference to the variety in connection with the rotation of cropping, we should find that both have advocates; the common or dwarf rape being generally grown in the southern and south-western counties, whereas the tall-growing rape or coleseed is chiefly known and grown in the northern counties and Scotland. It is, however, more especially esteemed as a crop of great bulk and feeding value in the Fenland districts of Lincolnshire and Cambridgeshire. Before pro-

ceeding with its cultivation we will refer to the analysis of the rape plant when at its height of feeding value. Dr. Voelcker, in giving his estimate as representing its feeding properties, states its constituents as follows:—Nitrogenous compounds or flesh-formers, 8.188; heat-producers and fat-formers, 8.209; mineral matter, 1.608; water, 87.050; total, 100.000. In carefully looking at this analysis we cannot fail in perceiving the great value it possesses as a food for the fattening of cattle and sheep, and at the same time it exhibits all the requirements as a profitable food for dairy cows as well as young cattle and sheep. For the latter, however, it is so extremely forcing that we consider it the most dangerous food, and although so proofy in itself, the sheep require exceedingly careful management when fed upon it in the open field by folding. We have in consequence, when the sheep were turned into a folding of rape when in full growth and luxuriance, to prevent hoven or blown always adopted the plan of turning the animals into the food twenty minutes only, and then turn them out for about the same time, when some of them will lie down and commence chewing the cud; after this they may return and feed with impunity, and will not become hoven. In feeding cattle, however, such as dairy cows or fattening bullocks, we recommend cutting it into chaff mixed with one-fourth of straw, in which state it will always prove healthy provender, and the bean or barley meal and cake in the meal state should always be mixed with it, so that all the food given may by mixing together be consumed without waste and with the best effect.

It is often recommended that sowings of rape seed should be made at different times, in order that it may be at full head for feeding as the sheep may require it. This applies only to the dwarf variety, and shows how short-lived it is as regards the best time for feeding, for when sown thickly and broadcast, unless the stock feed on it within a few days when it is at its best, the leaves will become blue, then yellow, and thus the chief value of the food will be lost. If, however, the seed is drilled and treated in the same way as Swedes both as to manure and tillage, horse-hoed and hand-hoed at the proper time, setting out the plants at about 9 inches or a foot apart in the lines, they will make a great growth, and each head will afford a large quantity of rich and valuable foliage. In this way the growth of rape is often made advantageous, and if the sheep are allowed to eat-off the greens and the folding is done with regularity, the stumps will strike out again and yield a second useful crop in the same season. It is not, however, generally considered advisable to grow rape in preference to mangolds, carrots, or Swedes, except upon cold and heavy soils, which are unfavourable to those root crops. It must, therefore, be considered a crop especially adapted for sowing early on strong land, and to be fed-off during the summer and autumn, to prevent the stock from treading the land to its injury. Besides, it has been proved that the stumps and roots ploughed-in and left to decay have a most beneficial effect upon the crop of wheat succeeding it, and when we consider the value of the plant as shown by the analysis, this may be expected. Upon strong soils about 1 lb. of seed per acre is sometimes sown and hoed-in between the lines of beans, and we have seen a large quantity of sheep food grown after the winter beans, which come off for harvesting at an early period, thus giving time for the rape to grow and be fed-off by sheep in time for sowing the land with wheat. It is not, however, a crop we can recommend for use upon dry, kind, or sandy soils fit for producing turnips, &c. The above observations are to be considered as applying only to dwarf rape.

The tall rape, commonly called coleseed, is a much more productive variety, and upon certain soils, especially those containing a large portion of humus like the Fen lands, and peaty soils in various districts, it yields an enormous bulk of food for sheep or cattle. It is a common plan to plough up a wheat or oat stubble work down fine, and sow about 8 lbs. of seed per acre broadcast; and the growth is so different from the dwarf rape that when the land is in good condition, although the seed may be sown thickly, it will not stop growth nor turn colour in the leaf. We have

often grown it a foot higher than the hurdles, with luxuriant leaves, and gross, fine, and succulent stalks, and when fed off by sheep at an early period they will eat all the crop nearly to the ground, as the stalks are soft and juicy. If, however, the crop remains long on the ground, the stems will become harder and not so well adapted for sheep. When cut-up with the scythe and passed through the chaff-cutter with sweet straw, it makes capital food for forcing-on cattle fattening in stalls or boxes in summer time, at which season of the year there is little else except mangolds, vetches, clover, saintfoin, lucerne, or trifolium. It is a capital way of giving the meal, for by mixing with the coleseed and straw chaff, it being moist as it comes fresh from the chaff-cutter, the meal adheres to it quite as well as to roots cut with Gardener's cutter. The latter plan we always recommend as the best way of feeding either cattle or sheep when they are allowed cake or meal of any sort, because there is no waste in usage, and the animals will be better in health. When numbers of sheep feed together they get each a more regular quantity of the superior food when mixed with roots or green fodder. The tall rape is excellent for mixing with vetches, for where summer vetches are sown broadcast, two bushels of seed per acre, with 1½ lb. of coleseed, it produces not only a very heavy crop, but is much more valuable than vetches alone. The coleseed growing so long and strong holds the vetches up off the ground, and preserves the crop longer in condition for feeding, and this is important whether used for feeding sheep in the cages or cattle in the mangers.

Our practice has been, after a crop of vetches or trifolium has been taken, to plough and sow the coleseed and summer vetches as above stated, and in this way the two green crops are of great importance to the home farmer. These crops may be used for many different sorts of stock, pigs included, particularly for breeding sows, but we never could make up our mind to try it for feeding farm horses, fearing that the coleseed may gripe them, colic being a complaint to which horses are particularly liable in summer time. There is a method of growing rape which answers well for both sorts—that is, sowing the seed and growing the plants in beds in the spring, in the same way as for cabbages, and then planting-out after an early oat crop or late green crop. The coleseed is, however, better adapted for planting or ploughing-in under furrow as for cabbages, &c., on account of the stem or stalk being so much longer, and particularly for ploughing-in. This is an advantage, and facilitates the work at the time of planting. Rape may be planted even after wheat, or almost any crop if done before the 1st of September, and in ordinary seasons it will yield a considerable quantity of food in early winter, and may be left and fed again in the spring, when the land would be free of the crop quite in time for sowing Lent corn. When the rape plants are set out early in August they will make a rapid growth of sprouting leaves, and make first-rate food for early ewes and lambs to run over once a day when feeding grass land simultaneously. The home farmer need not fear to have any trouble with the stems or stalks, for they make capital manure when ploughed in.

WORK ON THE HOME FARM.

Horse Labour.—The sowing of beans, peas, barley, and oats has employed the horses the past six weeks, and the season as a whole has been very favourable. It has, however, almost entirely absorbed the horse labour, and therefore but little has been really done towards the working the fallows in preparation for mangolds and other root crops, except where steam power has been employed in cultivating the fallows. We notice in various instances farmers have very judiciously employed steam cultivating tackle in breaking up by cross culture those fallows which had laid ploughed during the past winter; we therefore can only recommend the home farmer to do likewise, not only for the purpose of forwarding the land in preparation for roots, but also with the view of easing the horse labour of the farm, by making steam power do all the severest labour connected with the tillage for root crops. The winter vetches and trifolium have been so seriously damaged by the slugs and the severe frost during last winter, that a very large acreage of these crops cannot be depended upon for producing a profitable crop upon farms which we have looked over lately; we therefore advise the home farmer to minutely examine these crops, and where great damage has been done to plough and sow the land again, for these crops are of so much value as green fodder that they cannot be dispensed with upon farms in general. We notice, too, that in many cases the rye and winter oats have been destroyed in the same way, therefore the land will have to be resown with some other seeds; and the question for the home farmer to consider is, What will be the requirements of the stock during next winter? If the land for roots is set out to a sufficient extent, the land, after failing in plant for rye, may be seeded to dregge or barley, according to the nature of the soil and its condition as to cleanliness and freedom from couch grass. The late rains will have enabled the home farmer to have the pasture and park lands rolled down where they are intended to be laid up for hay.

Hand Labour.—Men will still be employed in hedging and fencing, also in draining, and where it is intended to lay more land

into pasture there will always be work for the men in couching and carting couch grass, weeds, and stones. As soon as the grass seeds are sown and the land finished off by the requisite harrowing and rolling it will be necessary for the home farmer, to the best of his judgment, to have the watercourses and trenches properly marked out and struck with the plough, so that the men may be immediately employed in digging out the water furrows, and carefully spreading the earth which comes out over the land thinly and regularly before the grass seeds come up. Women now should be employed in the pastures and park lands in taking up docks and other root weeds, also in picking up sticks and stones upon any portion to be laid up for the hay crop. The shepherds will still have plenty of employment in caring for the flocks, particularly if it consists of ewes and lambs, and it will be especially necessary where the animals are attacked by foot rot or the epidemic lameness to have them cured and properly attended to at all costs. When first attacked is the time to treat them with the best effect, because when the irritation in the foot first appears between the claws or hoofs is the time to treat the disease with success; whereas, if it is allowed to extend under the horny part of the hoof, it is not only more difficult to stop or cure, but it is a question of double or treble labour for the shepherd or his assistant, and a great and serious loss of health and condition in the animals. Now in order to treat every case at its outbreak it will be necessary to drive the animals to the coop or fold every day and examine all the cases as they arise, and to apply the remedy at the same time. In case this course of management is neglected we can give no hope of its being cured or kept under without great loss of condition to the stock; for wherever the disease is allowed to spread under the hoof it is a work of time to effect a cure, even by the application of the best and most approved remedies. It depends upon the cutting and clearing away the hoof as far as it is undermined or separated from the quick or fleshy part of the foot, and this must be done without making the foot bleed, and in this lies the great difficulty, for otherwise it cannot be cured on the occasion of dressing; we wish, therefore, to show that the treatment is not only a question of care and skill, but of heavy and tiresome labour also. A farmer told us the other day that his large flock of seven hundred ewes and lambs were nearly all down with the epidemic lameness, and upon our advising with him as to the treatment we have thus described he was struck with amazement, and said, "How am I to treat so large a number?" Our reply was this, "You have said that the loss by lameness will exceed the large sum you have expended in cake, whereas if you had looked to the sheep's feet properly, even if it took two men their whole time to attend and dress them, you would have been money into pocket, as you would then have had a sound and saleable flock instead of the diseased condition in which they are now, and the end and loss attending which you do not yet know." The dairy cows may now feed on grass, but in all cases where the grass is short they should receive mangolds, cake, and hay, and until the 1st of May they should be under cover or in yards at night.

PHEASANT FOWLS THE BEST LAYERS.

In reply to a correspondent, E. Barton, who desires to know what are meant by "Pheasant hens" which have been recommended as "the best layers," we cannot do better than publish what was once written by a great authority in reply to the following question:—"What fowls will prove themselves the best layers the year round, simply for size, with quality of eggs, and entirely irrespective of breed or fancy?" Several of my tenants and friends have," wrote the late lamented Mr. E. Hewitt, "tested this very conclusively during the last few years; and undoubtedly the most satisfactory produce has resulted from the cross between a Game cock and Golden-spangled Hamburg hens, or as they are commonly called, "Pheasant hens" in the midland counties. The cross with Moonies was not nearly so useful, and therefore I am still carefully descriptive. In the former cross the poultry yard thus carried with it a strong similarity to the Hamburgs, and very respectable appearance, though naturally many of the hens will be single-combed and 'Gamey' looking. They attain a very good size—5 or 6 lbs. each, and the flesh is of first-rate excellence. I am speaking of hens only, the Game cock being the sole possessor of the harem. Another advantage from these half-bred hens is, many of them will sit well and rear chickens as attentively as need be; but they are not prone to incubation, or they would not be so profitable as layers. The eggs are of a very good size, and their quality always commands a preference with buyers. Again, the fowls themselves I believe to be of the most hardy that can be met with, laying during the late severe winter without any intermission, and never showing those symptoms of distress and want of condition that most fowls similarly situated would have then exhibited."

SPRING CHICKENS.

It is a common remark of my neighbours when visiting my spring chicken department, "I never saw so many chickens

together, and at this time of the year too—how do you do it?" Easy enough, my friends; all you have to do is to save your early pullets, for early chickens make early layers, they in turn early sitters, and so on from year to year. At this season the changes are rung to all sorts of tunes, until it becomes like a twice-told tale as to the management of spring chicks. But we have had such unusual good success so far this season in rearing the little things, that I will furnish my quota of advice and tell your readers how I have accomplished it. This season we cut off the water supply entirely from the chicks, and substituted sweet milk slightly scalded. This is about the only change in the management from former years, and to this I attribute the decrease in the mortality list. Out of several hundred chicks, some of which are at this writing (March 12th), larger than quails, the loss has been but sixteen. They are fed five times per day—viz., 1st feed, corn and oatmeal mixed with scalded sweet milk; 2nd feed, chopped raw vegetables with a little cooked meat; 3rd feed, wheat screenings; 4th, meal again with boiled potatoes; 5th feed, hard-boiled eggs slightly peppered. No sour milk is given save occasionally a mess of Dutch cheese. Oats were sown early in boxes, which furnish them with plenty of fodder. All eggshells are saved and shredded up fine, and they more than "go" for those. The first two weeks they are kept in a room slightly warmed in the daytime. After that they are removed to a building expressly for their use with a glass front south. The floor is of sand and gravel, into which air slaked lime has been raked. Of course the coops are kept clean. One of the hens with chicks twenty-eight days old commenced laying in her coop, and lays nearly every day. She is a Plymouth Rock, hatched July 4th, 1879.—J. W. H. (in *Prairie Farmer*).

VARIETIES.

THE Surrey branch of the British Bee-keepers' Association's Apianian Show will be held in the Skating Rink, Croydon, on the 11th and 12th of August. Mr. E. S. Wheeler, The Waldrons, Croydon, is the local Hon. Secretary.

—THE DISTRIBUTION OF SEEDS IN IRELAND.—H.R.H. the Duke of Edinburgh has been busily engaged in having the seeds provided by the Duchess of Marlborough's Relief Fund distributed at various points on the west coast. H.R.H. has several ships under his command employed on this duty. It was intimated at a meeting of the Committee of the fund held on Monday that the last of the seed potatoes had been allocated; and, having regard to the lateness of the season, no more should be purchased. This may hold good as regards potatoes and seed oats, but there are other kinds of seeds which might be distributed with great advantage to the people. We must regret that the Committee has not taken this view of the matter, as a great opportunity for doing much good will thereby be lost.—(*Irish Farmers' Gazette*).

—THE AMERICAN MEAT SUPPLY.—An announcement is made that throughout America the cattle are increasing considerably faster than the population. The statistics of what our English cooks and consumers disparagingly call "tinned victuals" are curious. The figures are colossal, like everything else in America. From Texas, Colorado, and other States thousands of three and four-year-olds are forwarded to Chicago, Kansas City, St. Louis, Philadelphia, and New York. They cost 1½d. to 2d. per lb. In some of the larger establishments upwards of 1000 cattle are slaughtered daily, and carefully and systematically disposed of. Through the great Chicago stockyards upwards of a million cattle and seven million hogs pass annually. Then there is the refrigerating process, which is described as being now very perfect and trustworthy. Beef imported on this system has been sold as low as 4½d. per lb. in Liverpool; and a writer in the *Times* says that British farmers must make their arrangements so as to compete with an average price of 7d. per lb. They did it once, he says, and they must do it again; but he does not add the necessary information as to how it is to be done. In the matter of mutton this new import ought to make up the recent deficit. About 1000 picked carcasses, weighing 70 lbs. to 80 lbs., conveniently hung among the quarters of beef, are imported to British ports every week, and pay if disposed of at 6d. During the next twelve months these supplies will moreover be largely augmented.

—MEAT FROM AUSTRALIA.—Mr. D. Talleman writes to the *Times*, pointing out that, in addition to the "Strathleven" shipment of 34 tons of fresh meat from Australia, the other trans-tropical shipments have been—one in 1877 of 100 tons of beef and mutton, by the "Frigorifique," from South America to Rouen; one in 1878, by the "Paraguay," from South America to Havre; and a second by the same vessel, consisting of 10,000 sheep, which arrived at Havre last month. These shipments all arrived in good order and condition. The systems of refrigeration vary, that of the "Strathleven" being by compression of air by the Bell and Coleman process, the "Frigorifique's" the methyl ether system of Tellier, and the "Paraguay's" on the ammonia process of Carre Julien. Other systems promise equally good results. The principle that fresh meat is readily transportable through the tropics from any distance and in any circumstances is thus amply demonstrated. It only

remains to apply the principle to home-grown meat, when the producer and consumer will derive benefits from it.

METAL RUNNERS TO FRAME HIVES.

WHEN treating this important subject (page 268) I incidentally mentioned that I was the inventor of the frame with end projections at opposite sides, used so much by Mr. Abbott and commonly supposed to be his. In the last issue of this Journal Mr. Abbott, while admitting my authorship of the frame, denies that he made it from my drawing. I have more than once allowed statements touching myself, and made by Mr. Abbott in his journal, and which have seemed to call for the warmest rebuke, to pass unnoticed for two reasons—first, I am anxious to devote what time I have for writing upon apicultural matters to the interest of my brother bee-keepers and our mutual hobby, and second because I have considered Mr. Abbott and myself are both sufficiently well known to make my defence unnecessary; but in this instance it is well perhaps that I should give the facts a little more fully than previously. When Mr. Abbott was describing in his journal a hive which was to be "the hive of the future," he gave a woodcut of the proposed top bar which I saw to have three remediable defects,—first, waste of wood; second, difficulty in manufacture; third, insufficiency of under surface to give steadiness. I walked to his house, a distance then of three miles from mine, and gave him an explanation and a sketch of my frame bar. He saw and admitted its advantages at once, and from then till now has made this bar without any change. The idea I gave him as freely as I give all ideas I may have, and no charge of plagiarism has been made or dreamt of. He has nothing to deny, except, perhaps, that what I dignified as a drawing was not worthy of the name; to this much he is welcome. In conclusion I will only say that I feel, and surely here I shall not be alone, that an idea which must have brought Mr. Abbott through his business many scores of pounds might have had a more gracious acknowledgment than that conveyed in his communication of April 8th, but *chacun à son goût*.—FRANK R. CHESHIRE, *Avenue House, Acton, N.*

BEE PROSPECTS FOR 1880.

I AM happy to be able to say that my bees have weathered the winter remarkably well. We had here sixteen hives at the end of autumn, and for the first time in twenty years, if not more, we have come out of frost and snow without the loss of a single hive of bees from dysentery, starvation, or foul brood. This is the result of careful and early feeding, stopped directly the cold began. To twelve of those hives I gave over 2 cwt. of sugar; and on sugar alone dissolved in boiling water, not boiled or doctored with anything, they have lived and thrived. Theoretically I might have improved this food. It ought to have had a little vinegar or salicylic acid, or salt or brandy, perhaps a little of all. Practically I could not have done better. This is worth recording, as demonstrating what is sufficient to keep bees in good health. And it must be borne in mind that my bees had absolutely not a particle of honey sealed up when winter came in any of these hives. I doubt if there was 1 lb. of honey in all these hives put together; on sugar and water alone, I repeat, they have thriven.

They are all now breeding fast, and the weather is splendid. Flowers are coming out everywhere to supply them with pollen, but for about ten days they stored no pollen except what I substituted for it in the shape of pea flour mixed with crocus pollen. We have here a great quantity of crocuses, the common yellow crocus with a large blossom. These we filled two or three times a day, when the sun was out, with the pea flour as last year. Ten minutes after we had filled the crocuses hundreds of bees were swarming over them, five or six bees rolling vigorously in the same blossom. It was a curious sight and created much astonishment. I know not what the bees would have done without this pea flour, there being no flowers on the laurustinus and no pollen to be obtained anywhere else save from the crocuses, which would have been quite inadequate to the wants of our sixteen stocks. Now there is no occasion to supply them with this artificial food; dandelions and celandine in the fields, besides laurustinus, gooseberries, and a variety of other garden blossoms, are out in great abundance.

I have remarked as unusual the very small mortality which has prevailed among my bees during the months of December and January last. In ordinary years the floorboards have been more or less covered with dead after a lengthened confinement. Last winter in spite of its gloom and severe cold, continued often for weeks together, when there was no stirring out of the hives, I had to clear away very few dead from the floorboards. Had it been otherwise some of the stocks would have been very weak this spring, as breeding last autumn was rather below than above the average in all hives. My prospects are decidedly cheering, the more so as all the bees except my own are dead within three miles of my garden, consequently my hives have the whole produce of our country side at their disposal. The wail is great around me among cottage bee-keepers, but I have little pity for them, as they

would take no trouble to feed. The verdict of a Somersetshire jury would be, "Zarve 'm right."

I may add that I have occasion to feed very few of my bees even for stimulating purposes, not caring that they should store any sugar syrup. Those which have bar frames receive half a pound of syrup at a time, poured carefully into the cells on one side of a bar frame. This is the perfection of all methods of feeding in the early spring. Other hives in boxes (and I have not a single straw hive) are fed by a bottle at the top.—B. & W.

BEE-KEEPING MADE EASY.—No. 3.

SPRING AND SUMMER TREATMENT.

BEE-KEEPING like many other pursuits is easy to those who understand it, and generally speaking fondness for a pursuit grows with the ability to engage in it. Some people are fond of bees before they are able to manage them well, and such people I am anxious to help by explaining some of the fundamental principles and noticing some of the salient points of bee-keeping.

If bees are properly treated and their hives well covered in autumn they need but little attention during the winter months. When snow covers the ground the doors of hives should be closed to prevent the bees from coming out, for often when the atmosphere becomes warm enough to thaw the snow the bees come out and fall into it and are thereby lost. In fine winter weather bees come out of hives occasionally for air, dance about their hives for a few minutes, and carry out their dead. During long winter storms when bees keep within doors dirt accumulates on the floor boards, which should be scraped off some time in February. In the month of February bees in England commence to breed; in Scotland, which is later, breeding does not usually begin till March. Seasons and districts differ, and therefore the time to commence feeding should be left to the judgment of bee-masters. The warm covering recommended for bees in winter should not be removed till the end of April, for it is very helpful to bees in their efforts to rear and hatch brood in spring. The importance of having hives warmly covered during the months of March and April cannot well be magnified, for during the spring months bees are bent on multiplying numbers, and therefore set as many eggs as they can cover and hatch.

Spring feeding is a practice more generally followed now than it was formerly, and consists in giving bees a small portion of syrup made of good sugar and as much pea and wheaten flour as they will carry in. Cane sugar is better for bees than beetroot sugar; in fact, I dread using beetroot sugar for bees in autumn. Last autumn I bought two hives from a person who had fed them up for winter; they were brought to my garden and placed among the rest. The bees of these two hives have died and are dying from some disease, caused, I think, by improper food, for all besides them are healthy and prosperous. I have seen bees killed by the use of bad sugar years ago. Now about pea flour, I have to say that bees in early spring are fond of it, and readily carry it to their hives from wood shavings placed in a box or barrel and sprinkled with flour every day. They use the flour as pollen to feed their young. They take wheaten flour in the absence of pea flour, and while they are carrying home either of them or pollen other bees of their community are carrying home water, much of which is used with pollen in rearing brood. As spring advances and flowers become plentiful the bees forsake the meal barrel and prefer the pollen of flowers.

Many successful bee-keepers object to spring feeding, believing it stimulates the bees unnaturally, and causes them to leave their hives when they should stay at home. Water, so necessary in brood-rearing, is never stored up in hives, and therefore a loss of bees may be sustained in efforts to find and fetch it in cold weather. Besides, it is well known that in ordinary seasons hives with sufficient food in them in September to keep the bees till the fruit trees blossom in spring succeed as well as those that receive artificial stimulus. One autumn one of our hives weighing 70 lbs. was left on the moors where there were no spring flowers. Though it received no attention whatever in winter and spring it was the bees were the first to swarm in June, though standing in a colder region and 800 or 400 feet above those standing on the Clyde. In mild or ordinary seasons bees commence to breed soon enough. In cold springs I think feeding is an advantage and secures a profitable return. Whenever bees commence to carry in pollen and water it may be safely presumed that breeding has begun and should be encouraged. When bees begin to move and become active it is advisable to encourage them. I never suffer their breeding propensities to be checked or stopped by hunger or cold weather. When bees are on the border land of starvation they frequently suspend breeding, and wisely so, in order to keep what little food they have for themselves. Often have I known bees during discouraging weather at the swarming season let their combs become empty of brood, and thus they were checked and thrown back for a month or six weeks. As bees multiply and brood extends a great deal of food is necessary in large hives. In cold seasons such as last year constant and generous feeding is necessary. If bees cannot go out of doors it is good policy to give them something to do at home. In honey seasons feeding

should be avoided, for if syrup be given to bees while they are gathering honey their indoor work becomes too heavy and embarrassing, or as an old Scotch lady once said to me, "It tangles them." In honey seasons bees work and thrive fast enough without artificial food, and soon arrive at the swarming point.

The swarming and non-swarming systems of management have now to be considered, and I approach this subject with the conviction that no one can determine which system is the better of the two. Circumstances and seasons differ as well as localities, and what is best for some bee-keepers is not best for all. In early districts, and honey seasons lasting till the end of August, we think the swarming system is the most preferable and profitable, and taking a run of good and bad seasons together we think it has many and great advantages over the non-swarming system. By the swarming system stocks are made doubly strong in autumn, kept free from foul brood, and generally swarm early. We here repeat what has been already said—viz., that with strong hives in autumn it is hardly possible to fail in being successful in bee-keeping.

The non-swarming system has advantages and great advantages in bad seasons and in some districts. But let it be remembered that the aim of all thorough-going practical men of both schools is to have their hives well filled with bees and brood as early in the season as possible, either for swarming or supering. In our next letter the art of swarming and supering will be explained.—A. PETTIGREW.

OUR LETTER BOX.

INCUBATOR (*Berie*).—Write to Messrs. Thomas Christy & Co., 155, Fenchurch Street, London, E.C. Very fine pea-flour is used as pollen by Mr. Raitt and other apianians.

GOLDFINCH AND CANARY MULE BREEDING (*Inquirer*).—It is early for mule-breeding, although no doubt some breeders, with their Goldfinches in a forward state, may have made a successful start. The month of May is far preferable, and a house-moulded Goldfinch is better to breed from than one caught last year. Disappointments are more likely to crop up over mule-breeding than with Canaries. A practical breeder, one who pursues the hobby in a business-like way, can tell to an hour or so when the young will be chipped by reference to his note book, and also whether they are likely to possess light or pied plumage from the appearance of the skin and down of the young. If they appear of a very dusky hue the birds will be of the kind known as "dark mules." Young birds from the Siskin and Canary cross are smaller and darker than those from the Goldfinch and Canary, but although less they are very vivacious and make nice song birds.

PARROT SELF-PLUCKED (*G. Lord*).—Do not give it animal food but plenty of fruit, and a tepid bath once or twice daily.

RATTLE IN COCKEREL'S THROAT (*W. B.*).—Your bird has a cold, and, like many human beings, is suffering from the east winds. Give him some bread and strong ale, and two pills of camphor every evening, each the size of a garden pea. It will disappear when the wind changes.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51°32'40" N.; Long. 0°8'0" W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.					Rain.
1880.	Barom. ter. 39 and Sea Level	Hygrome- ter.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature.			
April.		Dry.	Wet.			Max.	Min.	In sun.	On grass.		
	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	In.	
Sun. 4	29.399	52.3	50.3	S.W.	46.3	59.4	43.5	97.3	45.3	0.080	
Mo. 5	29.473	49.6	45.6	S.W.	45.8	55.2	40.4	110.0	55.6	0.185	
Tu. 6	29.258	43.6	41.2	N.W.	45.2	56.4	39.0	107.3	54.0	0.010	
We. 7	29.470	40.6	40.2	N.W.	45.1	56.3	35.7	100.0	56.6	0.030	
Th. 8	29.860	42.8	42.5	N.N.E.	45.3	56.5	38.6	104.8	50.9	0.035	
Fri. 9	30.227	44.9	41.2	N.N.E.	45.2	50.2	39.8	77.1	56.2	0.060	
Sat. 10	30.204	42.0	40.6	N.N.E.	44.9	48.2	38.0	74.0	56.8	—	
Means.	29.691	45.2	43.1		45.4	54.6	40.2	93.8	55.5	0.400	

REMARKS.

- 4th.—Sunshine and showers throughout the day, very clear fine sky at sunset.
 - 5th.—Cold sharp showers and hail, with intervals of bright pleasant weather; fine clear evening.
 - 6th.—Dull morning, very fine and bright after 10 A.M.; at 5.15 P.M. high gusty wind and dark, thunder 5.29 P.M., lightning 5.30 P.M., rain at 5.35, sharp storm till 5.48.
 - 7th.—Foggy and cold in early morning, shower at 2.45 with thunder; afternoon damp and slightly hazy, little sunshine at intervals during the day; fine evening.
 - 8th.—Very fine pleasant morning; heavy shower with hail 1.30 P.M., thunder 1.45 P.M., afternoon continued shower; damp cold evening.
 - 9th.—Overcast cold day, very little sunshine.
 - 10th.—Fair throughout, but cold and dull.
- Showery, with sharp thunderstorm on 6th; temperature near the average. Two slight frosts on grass.—G. J. SIMONS.

COVENT GARDEN MARKET.—APRIL 14.

THERE has been a slight improvement in trade during the week, though not sufficient to affect prices, and a good demand for best goods at low rates has sprung up. Cucumbers are still heavy.

WEEKLY CALENDAR.

Day of Month	Day of Week	APRIL 22—28, 1880.	Average Temperature near London.			Sun Rises.	Sun Sets.	Moon Rises.	Moon Sets.	Moon's Age.	Clock after Sun.	Day of Year.
			Day.	Night.	Mean.							
22	TH	Royal Society at 8.30 P.M.	59.0	37.4	48.2	4 50	7 6	4 36	3 15	18	1 38	113
23	F	Quekett Club at 8 P.M.	59.2	36.8	48.0	4 48	7 8	5 48	3 24	14	1 50	114
24	S	Royal Botanic Society at 8.45 P.M.	58.8	36.0	47.4	4 46	7 10	7 16	3 55	0	2 1	115
25	SUN	4TH SUNDAY AFTER EASTER.	59.5	37.3	48.4	4 44	7 11	8 43	4 23	16	2 13	116
26	M		58.0	35.4	47.2	4 43	7 13	10 5	4 58	17	2 23	117
27	TU	Royal Horticultural Society—Fruit and Floral Com.	59.2	35.7	47.5	4 40	7 14	11 16	5 45	18	2 31	118
28	W	Society of Arts at 8 P.M. [mittées at 11 A.M.]	60.3	35.7	48.3	4 38	7 16	morn.	6 48	19	2 41	119

From observations taken near London during forty-three years, the average day temperature of the week is 59.3°; and its night temperature 36.6°.

WATERING.

ACCORDING to my experience of the many operations connected with gardening, the most important is watering. Much care and thought are frequently required to do this properly in the case of outdoor crops, but it is under glass where the exercise of sound judgment is the most needed. The gardener who always keeps his plants properly watered will generally be found to grow them well. So much am I convinced of this, that when engaging a young man the first and last question I should ask would be concerning his knowledge of watering plants, and many gardeners besides myself are of the same opinion respecting the importance of this operation. My advice, therefore, to all young gardeners is to study the requirements of the plants under their care most particularly. Supplying any growing plant copiously with water for a few days and then allowing it to become dry will ultimately ruin the healthiest of plants. Of course, some plants suffer much more than others from being allowed to become dry. For instance, ordinary Pelargoniums and other bedding plants will not show the same injury after being too dry as a Maidenhair Fern in full growth, and a Pine-apple plant will bear being much drier at the roots than a Vine in a pot, but each suffers in a degree.

A not uncommon system is that of giving water to every plant in a house whether they are all dry or not; but it is very wrong, and the condition of the plants will soon prove it. Knowing when to withhold water is just of as much consequence as knowing when to supply it. The soil in pots is sometimes covered with moss, so that it cannot be seen whether the soil is dry or not, and in others it assumes a waterlogged appearance on the surface when the lower roots may be dry. Every kind of appearance may, however, soon be put to the test by simply giving the pot two or three sharp taps with the back of the closed hand: if a ringing hollow sound is produced it indicates dryness, but if the sound is dull and heavy no water is usually required. Those who practise this soon know the slightest indication either way, and others who pay that attention to watering which it deserves will soon be able to tell by the appearance of the plant or soil whether water is needed or not.

No one will ever practise gardening on an extensive scale for twelve months without experiencing numerous vexations, disappointments, and annoyances. Promising crops are blighted or destroyed, our best schemes being entirely frustrated by innumerable pests; but the greatest annoyance of all is to have our plants kept in a semi-dead state by those who profess to water them, and in doing so only wet the surface of the soil. If there is one thing more than another to avoid in watering, it is habitual surface "dribblings." When water is needed give it in abundance. Most people in potting leave the soil an inch or more below the rim of the pot. When the soil is dry it is never too much to fill up all the space with water until it overflows the rim. Newly-potted plants do not require the same amount of water as when the pots are full of roots. Then

it is often necessary to fill up the space allowed for water on the surface twice before the plants have had sufficient. I find that neglecting to give plants enough water is much more prevalent than giving them too much. Supplying too little may pass for a time in winter during dull weather, but from this time onwards throughout the summer and autumn too little water will result in stunted useless produce either of flowers or fruit.

When is the best time to water? is a question frequently asked, and to this no definite answer can be given. My practice is to have every plant examined morning and afternoon daily in summer, and once a day in winter, and it is time well occupied. No plants should be supplied with water lower in temperature than the house in which they are growing. Plants plunged in any heating material should receive water at the same temperature as the bottom heat. Liquid manure should never be given until the roots have taken possession of the soil. Many gardeners, I think, give liquid manure too soon to both out and indoor plants, the consequence being that many of the tender young rootlets are destroyed and the soil rendered sour. No liquid manure should be given to any plant as a rule until plenty of both root and branch growth has been formed, or the plant is showing signs of either flowering or fruiting. It is then that stimulants are of most benefit.

Kitchen garden crops I never water until absolutely obliged to do so. When the ground has been well cultivated before the crops have been put in it retains sufficient moisture for a long time, although the surface may look dry. Before supplying water to outdoor plants stir the surface soil well to enable the water to readily penetrate to the roots, and some hours afterwards stir the surface again, as nothing has such a tendency to make the soil stiff and hard as artificial watering. The morning is decidedly the best time to water any plant out of doors until May is over; afternoon or evening waterings chill both plants and soil, as may often be seen by the starved appearance which many assume under artificial watering during the months of April and May. The remarks which apply so forcibly to plants in pots also apply here. Never water unless it is done thoroughly. Those who are in the habit of dribbling water over their crops every time the soil appears dry, will find in the end that they are much behind their neighbours who never water. All water should be so applied through a rose, or in other ways that none of the surface soil is disturbed, as washing the soil from the roots is another bad practice sometimes observable.—A KITCHEN GARDENER.

TEA ROSES.

I CANNOT imagine any plant easier to grow than Tea Roses, nor any which can be more gratifying to the successful cultivator, but before they can become as generally grown as their merits would warrant there are two or three deeply rooted errors concerning them in most people's minds which require to be removed. If you wish your plants to become a prey to green fly and mildew, and produce a few deformed flowers, and then shed their leaves, procure plants of more than two years' growth in small pots, plant them in very

rich light soil close to the south side of a wall, and your object will very soon be accomplished. If you are of a persevering and determined disposition you will not give up with the first failure, but will try plants from another source, or on a different kind of stock, and fail again and again till you come to the conclusion, as so many have done before, that your climate is unsuited to this class of Rose.

I am going to advocate home-propagation of the Tea Rose, and it may be thought by some that this would be antagonistic to the nurseryman's interest, but I will endeavour to prove to the contrary. Make their cultivation easy and generally successful, a thousand plants will be grown where one is grown now, and the demand for new varieties alone will soon exceed that which we now have for those of established repute. We do not find that because everybody can propagate Geraniums the nurserymen have given up their cultivation. The Tea Rose will take a firmer hold of our feelings than it is possible for any Geranium to do, or indeed, I think, than any other class of plants.

My Tea Rose cultivation, although it is on a much too limited scale, almost divides itself into three distinct parts—viz., General Indoor Culture, Outdoor Culture, and Cultivation for Forcing; but there are certain details of treatment which concern all alike, not the least of which is their propagation, with which I will commence. Those who possess a greenhouse have a decided advantage, if they commence now, over their less fortunate brethren, and it is to these I will first offer a few remarks. Procure plants of the approved varieties in pots, let them grow in the full light indoors till their first flowers are nearly over, by which time if they have been kept clean (of the manner of securing this I will say a word further on), the growths will have become partially hardened, and be in the best possible condition for forming cuttings. This will bring us to the end of May or beginning of June, when we can make our own choice as to whether we strike them indoors or out. To the amateur who may be often away on professional duties, and has to leave the care of his choice plants to other and less skilful if not less loving hands, I would say unhesitatingly, Choose that system which necessitates no attention in your absence. The cuttings being in a suitable state, the conditions necessary for quick propagation are light without direct sunshine, almost total exclusion of air, a moderate degree of warmth, and a gritty soil. I often make a very simple propagating box as follows:—Knock the bottoms out of some old boxes which are from 6 inches to a foot deep, and place them over some prepared soil close to the north side of a wall; prevent the ingress of air at the lower edges by raising the soil outside and pressing it firmly against the box. When the cuttings are inserted and watered lay panes of glass over the top, pasting some strips of thick paper to the edges of the glass and the edges of the box if they do not fit closely, and let them remain without once lifting till growth is visible, say in a fortnight's time, when air may be gradually given by at first slipping a knife through the paper on one side, and then after three or four days cutting it on the other side. In another week's time (preferably on a warm evening, for evaporation will be more gradual at night than in a hot day) the glass may be shifted so as to admit an eighth of an inch of air across the box at one end, or in the middle, and very shortly after that on a warm evening the glass may be removed altogether.

Do not be afraid of the cuttings damping from being kept close. All damping is caused by great fluctuations of temperature, and on the north side of a wall fluctuations are reduced to a minimum. Choose growths for cuttings which are firm and have healthy fully developed foliage. The more foliage, provided it is never allowed to droop, the quicker and stronger will be the growth; and bearing this in mind, I do not remove even the leaf on the lowest joint if it has a stalk long enough to allow of the cutting being inserted a sufficient depth without any portion of the leaf touching the soil. The soft point of a cutting should be removed, leaving a fully grown and hardened leaf at the top. Two joints are sufficient for a cutting, one to be in the soil and one above it, but three or four will do no harm. If there is any doubt about the growth being sufficiently firm, it is safer to take the cutting off close to the old wood with what is termed a heel, but if the young growth is in good condition this is not necessary. Everything should be in readiness before the cuttings are taken off, for success depends on their being inserted and sealed up with as little evaporation as possible. Of course a sharp knife should be used, and a clean cut made immediately below the lowest joint. The soil should be so dry that it will not bind if squeezed

in the hand. A stick like the unsharpened end of a lead pencil should be employed for making the holes, and each cutting should be left to rest firmly on the flat bottom; then press the soil rather firmly all round the cutting, and as soon as the box is filled give a sufficient heavy watering to consolidate the soil without washing the cuttings out, and cover up as quickly as possible. Half the cuttings inserted and half the small plants are probably spoiled by making the hole for their reception with a sharp-pointed dibber, which is never entirely filled up although the soil may be made quite firm at the top. Those possessing plants with suitable wood for cuttings at the present time, and can command a minimum temperature of 55° in a suitable position, will have no difficulty in striking them; others who have to depend entirely on outdoor growth must wait till July, when, if they follow the details given above, will have every chance of being as successful in the matter of propagation as "my lord's gardener."

If there is a suspicion of green fly or any other insect on the little plants while they are in the cutting box give them a dusting of tobacco powder and shut up quite closely for one night, and all will be well. With larger plants, when fumigating is undesirable or difficult, a syringing, or preferably a dipping in a solution of half a pint of Fir-tree oil to four gallons of soft water, will kill every insect which troubles them, and will also kill that terrible enemy of Rose-growers, the mildew.—WM. TAYLOR.

BROCCOLIS IN SOLID GROUND.

By some heads of Broccoli which I saw in a farmer's garden I was reminded of one of Glenny's pieces of advice as it appears in his "Golden Rules." We read there—"The most humble practical gardener can often teach you more than the most popular authors." The heads were magnificent. One stripped of the leaves weighed 7 lbs. On asking for particulars I was told that the Broccolis had been planted the preceding summer in the paths between the Leek beds with a poker, the soil of the paths being left otherwise undisturbed. To understand this fully it is necessary to know that the way Leeks are cultivated in Welsh farmers' and cottagers' gardens is, as soon as the weather in March permits, manure is dug into the ground one spit deep. It is then trodden into beds 3½ feet wide, Leek seed is sown in the beds, and in the alleys Cabbages are planted, which are afterwards drawn as Coleworts. It is the custom to leave the Leeks very thick on the ground, and to remove some of them daily up to September for cooking purposes; besides which, as the ground is invariably foul, an unusual amount of weeding goes on. All this together causes the paths to become quite solid by the time the Broccolis are planted, and considerably lower than the ground of the beds, which being occupied by Leeks is left nearly undisturbed all the winter. The Coleworts would be over by the middle or end of June.

Suppose a modification of this to be tried, that the ground is prepared as above, trodden into paths 3 feet from centre to centre, and some crop taken in the intervals, care being taken to tread sufficiently often in the paths, especially after rain, to consolidate them, then plant at the proper time with an iron bar. Coleworts could be planted in the paths if it was desired to copy the practice exactly, but this would, of course, render the treading of the paths troublesome, and would probably be better omitted.—A. BOYLE.

SPRING FLOWERS.

WHEN a man has a hobby he is apt to ride it a little too hardly. When a reaction sets in it often comes on with a vengeance, driving all before it, sweeping on like the tide, and like the tide also having its going out as well as its coming in. In the quiet world of horticulture there is a steady reaction going on against the prevailing formal system of mosaic patterns, carpet gardening, and such like.

No doubt there is very much to be said in favour of the long-neglected herbaceous perennial. The tide in favour of the bedding-out system set in fast and furious, and drove all before it. The poor old herbaceous plants which had delighted our forefathers disappeared, and were only to be found in genial corners or nooks which had escaped molestation. But now these good old plants are brought to light again, and of course exalted in proportion to their previous degradation. We are gravely told that herbaceous plants will make our borders look as gay—nay, gayer, than the brightest of the

so-called bedders ever made them, and that perennials of a hardy and robust type are in every way superior to their brethren which have to live more than half their time under the protection of glass. It is not necessary to denounce any system of floral decoration; yet the objections urged against "bedding out" will do good if they save from utter destruction a most beautiful and useful tribe of hardy plants, and if they show that it is a great mistake to depend entirely upon bedders, especially in those cases, infinitely the most numerous, in which the bedders have to be bought from year to year to make a transitory blaze succeeded by ugly beds of earth.

There are two things to be considered in this matter—first, the possibilities; second, the surroundings. If it is impossible to replace the summer bedders with the variety of hardy plants which make a grand show in March and April—*e.g.*, Pansies, Daisies, Tulips, and Pyrethrums; and if consequently the beds and borders have to be left from October to May in their naked ugliness of brown earth, I should say, Give up bedding-out, for the blaze of a few months does not compensate for the loss of the beautiful flowers of spring nor for the barrenness of the autumn and winter. Now it entails much labour and also much space to be able to make a complete change of plants twice a year—that is, to supply the place of the summer bedders in October, and then to stow away the spring bedders in the kitchen garden in May, when their summer and brighter cousins take their place; and yet, if this cannot be done, how hideous and uninteresting is the garden through all the beauty of our April days! There is no looking forward to the gradual development of the hardy plant which has stood the winter, and begins to make some progress under the gentle warmth of the February sun. There is, in fact, nothing to interest, but on the contrary much to drive away, for a winter or spring garden of beds is simply unsightly when waiting for their summer occupants. But if, on the contrary, there is a possibility of renewing the plants taken away in autumn by the many spring bedders which may be used to take their place, this makes all the difference. The beds are at least full of something, and as the spring comes on they are a constant source of interest. If the winter is a mild one I have often thought that no summer garden can equal in beauty the spring garden well arranged, and there need be but little interval between the passing away of the lovely spring flowers and the arrival of the more glaring occupants of the summer garden.

But there are more than possibilities to be thought of: the surroundings form a very important element in the matter. For instance, I have in my mind's eye this moment as I write two very different gardens. One is attached to a large old-fashioned town house. The space occupied by the flower garden is small, and it melts away gradually into the kitchen garden, from which there is no formal division. A grand old Cedar tree overshadows the centre, and its gnarled roots look picturesque. The ground is uneven—sloping here and level there; high shrubs on one side, ivied walls on another, and the brick wall of the kitchen garden with its fruit trees on a third side. The mania for bedding has fortunately not reached this homely garden. You stumble on a large patch of the Christmas Rose (*Helleborus niger maximus*), which somehow has been driven to such gardens as this by its more frequently found sister, *H. niger*. Then you come to a piece of Heath, *Erica carnea*, and close by *Jonquils* and *Dielytra spectabilis* are in full beauty. Quantities of *Snowdrop* and *Crocus* leaves show that in February the flowers were abundant, and the reviving energies of the taller perennials are sufficient evidence that the period of bloom will be extended to a very late time in autumn; probably in December there will be fine flowers of the hardier *Chrysanthemums*. *Pelargoniums* and *Calceolarias* are brought out of the greenhouse in the kitchen garden to brighten the general appearance of things in summer. Now this old-fashioned garden, the type of many in every country town, would be quite spoiled by the introduction of carpet gardening and mosaic work. The surroundings are altogether against it.

A short distance from this garden is another very different. Close to a grand old feudal castle, with its grey walls mantled in Ivy, and its huge buttresses with their massive strength supporting the whole, there is a short terrace with a low wall on each side, and battlements along which are laid small guns, and a heap of cannon balls to each. A sun-dial occupies the centre, and a gravel walk goes from end to end. The border on each side is not more than 4 feet wide, but that gives ample room for laying out a pattern in the usual style of bedding out; and surely no other style of gardening would

suit this fine terrace half so well. Formality becomes to a certain extent informal when it is surrounded by rigid lines and architectural beauty. As you approach this terrace by a flight of half a dozen steps which lead down to it, the blaze of colour suits admirably with the cold grey stone of the walls on each side. At the present moment it is one mass of flowers from end to end, and the spring bedders are judiciously arranged so as to make a perfect whole. So long as all are in flower together, and as soon as the brilliancy goes off, the summer bedders will be ready to brighten it again.

The conclusion I come to is that spring bedding is of the very essence of the bedding-out system, and that without it bedding-out must give way to some plan which will at all events give us spring flowers. No summer beauty can atone for their loss; but there is one thing more to be thought of, and that is the trouble entailed upon the gardener by having to put out plants twice over. Many of us are in the hands of our gardeners to a very great extent, and must fall in more or less with their ways. I can fancy the horror of my own factotum if I were to tell him that I was going to do away with bedding-out, yet I have serious thoughts of doing so in one of my two flower gardens.—A GLOUCESTERSHIRE PARSON.

TYING VINE SHOOTS.

As Vines are now growing rapidly, tying the shoots or side branches into the places where they are to remain during the summer, is an operation which commands much attention. My time of doing this differs a little from the general rule. The majority of Vine-growers begin to tie down the shoots as soon as they are long enough to bend. At this stage in their growth the shoots are so tender that the slightest twist the wrong way breaks the point off. They may not break at the time of tying, but in an hour or two, or a day afterwards, they are hanging down useless. I never tie one of our Vine shoots into its place until after the fruit is formed, and by that time the young wood is as pliable as a willow and may be safely bent down and tied firmly without any danger of breaking. The points are taken out of all the shoots one or two joints or leaves beyond the bunch, and after that they do not suffer through being left untied until after the fruit is formed. I am thinning Grapes now and tying down the shoots at the same time, and they are all looking well.—A. K.

ROSE MARÉCHAL NIEL.

I AM often asked "Which is the best method of dealing with this Rose to secure a healthy growth and an abundance of flowers?" There are in my opinion many ways by which this desirable end may be reached, but one which seems a little out of the common seems to me worthy of record. I recently saw in the border of a span-roofed house in the garden of Thomas Matt, Esq., of Much Hadham near Ware, two plants covered with magnificent flowers 5 inches in diameter, the shape and colour equal to anything I have ever seen. The history of plant No. 1 is as follows:—A *Manetti* cutting was inserted in the poor loose soil of the border in 1876; this was budded with *Gloire de Dijon* in 1877. The *Gloire de Dijon* thus obtained was budded with *Maréchal Niel* in 1878. This bud was stopped when a few inches long and produced two shoots, which were trained in single line right and left in the manner of a young double cordon Apple tree. These shoots were stopped at 7 yards on the left hand and 4 yards on the right. Almost every eye had broken and produced a flower to the number of about fifty. Plant No. 2 was an older specimen, probably ten years old. It was originally *Solfaterre* on the Dog Rose. This *Solfaterre* was budded with *Maréchal Niel* and two shoots left, each of which was cut back to a single eye, the last visible, or almost invisible, eye on the shoots and the new breaks trained right and left in single line as before described. The flowers here though fewer (twenty) were rather larger than in No. 1. The house was filled with miscellaneous plants, with Grape Vines on the roof inside. The Roses were watered four times a year with liquid manure. The leaves were beautifully clean, not an insect or a spot of mildew to be seen anywhere. Theoretically speaking I should consider this a good way of dealing with *Monsieur le Maréchal*, and practically speaking it has proved so.—WILLIAM PAUL, *Pauls' Nurseries, Waltham Cross, Herts.*

LARGE SULPHUR HOOPED PETTICOAT DAFFODIL.—This lovely plant is one of Mr. T. D. Llewelyn's "finds" at Biar-

ritz, and is now in bloom with me. One scape bears two flowers. The flowers are twice the size of the common golden *Narcissus Bulbocodium*, and I believe the plant is hardier also as well as earlier. It is one of those quaint and lovely flowers that should have a sheltered place given it near a sunny wall in warm sandy soil.—DUBLINENSIS.

THE NATIONAL AURICULA SHOW (SOUTHERN SECTION).

SINCE the establishment of the southern section of the National Auricula Show a great impetus has been given to the culture of these beautiful flowers in various districts. It does not follow that all who grow Auriculas exhibit them, and therefore the shows do not afford a sufficient index of the influence exerted by the Society in increasing the cultivation of the plants; but that it has exerted an influence cannot be doubted, and these flowers are now grown in many gardens where they previously had no place. With the same energetic and judicious management that has hitherto characterised the southern directorate, the Shows will inevitably increase in magnitude and in the number of supporters. Signs of this are apparent, for not only was there a great increase in the number of exhibitors at the Show under notice, but the demand for plants during the past year has been greater than before. That Auriculas can be grown in the south is proved by the splendid collections exhibited from Slough and Loxford; but the cool summers of the north, and the pure breezes of high altitudes, appear important elements for producing that sturdy growth of the plants which is the precursor of such flowers as are produced by the celebrated growers. But the quality of the flowers on this occasion was not so striking as we have previously seen. A great number of the plants had manifestly been forced into bloom, some of them too early, and consequently lacked that firmness of texture and brightness which characterises them when in superior condition; and it was apparent, too, that the stakes employed were necessary, not so much for supporting heavy trusses as for giving stability to the rather tall and weakly stems that predominated. Several of the plants also had a more or less stunted appearance. This is attributable to the sudden and severe frost of autumn occurring after the dull wet summer, and which unquestionably injured many plants; and root-action this spring has not been so vigorous as usual. Still many excellent examples of good old flowers were staged with some of more recent introduction, and a greater number of new varieties were certificated than at any previous London exhibition. Of alpine the display was remarkably fine, and the selfs also showed to great advantage, some of the certificated varieties being of exceptional merit. Laced Polyanthuses were better than they have been exhibited previously, and some of the fancy forms were attractive. The nurserymen's and florists' miscellaneous collections of plants and flowers contributed powerfully to the effect of this excellent Exhibition, which was held in the conservatory, and was largely patronised during the afternoon.

The undermentioned awards we think are correct, but the delay in attaching the names of exhibitors to the prize flowers, and the constant moving of plants for judging, rendered it difficult to obtain the results with accuracy; and there was an absence of the smoothness that is observable in the working of exhibitions that are conducted exclusively by the Royal Horticultural Society's officials.

Following the order of the schedule we commence with the class for twelve distinct varieties. There were three entries, the premier award being secured by the Rev. F. D. Horner, Kirkby Malzeard, Ripon, with an even and excellent collection, including the following varieties—Horner's Erebus, Walker's John Simonite, Horner's Excelsior, Read's Czar, Horner's Heroine, Horner's Cecil Dalton, Turner's Charles Perry, Trail's Anna, Simonite's Frank Simonite, Horner's Ajax, Clegg's Lady Blucher, and Booth's Freedom, all very good. The first, third, fourth, seventh, and eighth were seedlings. Mr. J. Douglas, gardener to F. Whitbourn, Esq., Loxford Hall, Ilford, was a good second, his plants including several distinct and pretty seedlings, very striking among which was a white-edged variety named Conservative, which is described below. The third prize was secured by Mr. B. Simonite, Rough Bank, Sheffield, eight of the plants being his own seedlings; Frank Simonite, which is to be placed in commerce next year, being very fine, as were also Mrs. Dodwell, Mrs. Gorton, and Alexander Meiklejohn. There were eight exhibitors in the class for six varieties. Rev. F. D. Horner was again placed first with the following in good form—Horner's Ringdove, Horner's Ajax (nine fine pipe), Simonite's Frank Simonite, fine; Lancashire's Lancashire Hero, Sykes' Complete, and Leigh's Colonel Taylor. Mr. B. Dean, Ranelagh Road, Ealing, followed; and his best varieties were Chapman's Sophia with large well-formed pipe, and Smith's Mrs. Smith. S. Barlow, Esq., Stakehill House, Manchester, was a close third, the remaining prizes being awarded to Mr.

E. Pohlman, Halifax; Mr. F. Mellor, Ashton-under-Lyne; and J. T. D. Llewelyn, Esq., Penllergare, Swansea.

Eight collections of four varieties were entered in competition, the chief position being obtained by Mr. E. Pohlman, who staged even specimens of Mazzini (seedling), Headly's George Lightbody, Lee's Bright Venus, and Headly's New Green. Mr. Horner was placed second, his plants being nearly equal in quality to the first Horner's Phantom, Walker's John Simonite, and Horner's Sapphire were very fine. Mr. Llewelyn was an excellent third; his best plant being Richard Headly, which was very good. Mr. T. Mellor, Mr. Douglas, and Mr. S. Barlow were placed fourth, fifth, and sixth respectively. In the class for two dissimilar varieties there were nine entries. Mr. E. Pohlman was a good first with Litton's Emperor and Lancashire's Lancashire Hero. Mr. Horner was second with Horner's Thetis, and Lancashire Hero very good, but with a less number of pipe than the first. The other four prizes fell to Mr. B. Simonite, Mr. T. Mellor, Mr. S. Barlow, and Mr. R. Dean in the order named. In the next class for two plants the Rev. E. L. Fellowes, Wimpole Rectory, Royston, was the only exhibitor, and secured the first prize with good specimens of Kay's Topsy and Lightbody's Robert Trail.

Four classes were devoted to single specimens, a total of about 150 plants being exhibited. In the class for green-edged varieties Mr. Horner was first with Page's Champion, the premier Auricula; second with Horner's Cyclops, fourth with Horner's Orion, and sixth with Leigh's Colonel Taylor. Mr. B. Dean was third with Smith's Rob Roy, Mr. Simonite fifth with R. Gorton, Mr. Barlow seventh with Leigh's Colonel Taylor, and Mr. Mellor eighth with Campbell's Lord Palmerston. Thirty plants were staged in this class. There were forty-seven entries in the class for grey-edged varieties, and the prizes were awarded in the following order:—Mr. Horner for Headly's George Lightbody, Mr. Pohlman for Headly's Charles E. Brown, Mr. Dean for Headly's George Lightbody, H. K. Penson, Esq., Denham House, Ludlow, for the same variety, Mr. Fellowes for the same, Mr. Douglas for Lightbody's Richard Headly, and Mr. Horner for Lancashire's Lancashire Hero. There were twenty-eight exhibitors of white-edged varieties. Mr. Llewelyn secured the chief prize with Summer-scapes' Catherina; Mr. Horner followed with Walker's John Simonite, and was eighth with Smith's Beauty. Mr. Douglas was third with Douglas's Silvia, Mr. Simonite fourth with Simonite's Frank Simonite, and sixth with Hepworth's True Briton; Mr. Dean was fifth with Cunningham's Mr. Campbell, and Mr. Pohlman seventh with Lightbody's Sophia Dumaresque. For single selfs there were forty-six entries. Mr. Pohlman was first and third with Spalding's Blackbird, sixth with Mazzini, and eighth with Kay's Topsy; Mr. Barlow was second with Spalding's Blackbird, Mr. Horner fourth and fifth with seedlings, and Mr. Fellowes seventh with Turner's Master Hole.

In the class for fifty Auriculas, not less than twenty varieties including Alpines, three handsome collections were staged. Mr. Douglas was placed first with good specimens of the following among others—Headly's George Lightbody, Heap's Smiling Beauty, Lancashire's Lancashire Hero, Trail's Beauty, Kay's Alexander Meiklejohn, Campbell's Admiral Napier, Chapman's Maria, Smith's Ann Smith, Cunningham's John Waterston, Spalding's Metropolitan, Smith's Lady Sale, and a number of handsome seedlings. Mr. Llewelyn was placed second with rather small plants but good and fresh flowers, Campbell's Lord Lorne, Smith's Lycurgus, Turner's C. J. Perry, Headly's George Lightbody, Hepworth's True Briton, Martin's Mrs. Sturrock, Kenyon's Ringleader, Heap's Smiling Beauty, and several seedlings being noticeable. Mr. C. Turner, Slough, was third with very fresh and vigorous plants, in which selfs predominated, the most noticeable being Sims' Eliza, Turner's Charles J. Perry, Turner's Clipper, and Turner's Colonel Champeys. This was a very imposing group and was greatly admired, many visitors not being able to understand that it had not a higher position. No plants in the Show were better grown than these, but some of the varieties were less choice than in the other collections.

Alpine Auriculas were shown in very good condition generally, Mr. C. Turner, as usual, carrying off the chief prizes for these plants in the three classes devoted to them. This exhibitor's first-prize collection of twelve were very profusely flowered; the best were William R. Bragg, Unique, Evening Star, King of the Belgians, Dr. Denny, Queen Victoria, James Fowle, Mrs. Llewelyn, Col. Scott, Mrs. Dodwell, Napoleon III., and Miss Frowd—all Turner's varieties. Mr. Llewelyn followed with good but less profusely flowered specimens, but in excellent colour and form. Mr. Douglas was a close third, but his plants were not quite so even. Mr. Dean was fourth. Half a dozen collections of six alpines were staged, the best being from Mr. C. Turner, who had excellent examples of his varieties Mrs. Thompson, Sambo, King of the Belgians, Mrs. Dodwell, Mrs. Ball, and Shirley Hibberd. Mr. B. Dean, Mr. Llewelyn, Mr. S. Barlow, and Mr. Douglas followed in the order named with rather small plants. Twenty-three single specimens were entered, Mr. Turner securing the first, second, third, fifth, and sixth prizes with Titian, Mrs. Ball, King of Belgium, Unique, and Duchess of Connaught; and Mr. Douglas was fourth with Meiklejohn's Mrs. Meiklejohn.

The prize for the premier Auricula in the Show was awarded to Mr. Horner for a small plant with six flowers of Page's Champion, a decision which did not meet with the unanimous approval of exhibitors and fanciers.

The special prizes for seedling Auriculas were awarded as follows:—*Green-edged varieties*: Mr. Horner first with Cyclops and third with Orion, Mr. Dean being third with Smith's Rob Roy. *Grey-edged varieties*: Mr. Dean first with Rev. F. Tymons, Mr. Llewelyn second with an unnamed seedling, and Mr. Horner third with Thetis. *White-edged*: Mr. Douglas first with Conservative, and Mr. Simonite second with Mrs. Dodwell. *Selfs*: Mr. Horner first with Heroine, Mr. Simonite second with Mrs. Douglas, and Mr. Mellor third with Lord Salisbury. *Alpines*: Mr. Turner first and second with Unique and Titian, Mr. Douglas third with Flora Douglas.

Polyanthuses were well represented, those from Mr. Barlow being particularly attractive. Four classes were devoted to them, and the competition was fairly close in several cases. In the class for twelve distinct gold-laced varieties Mr. Barlow was deservedly placed first with a handsome collection of the following good varieties:—Saunders' Cheshire Favourite, Buck's George IV., Crownshaw's Exile, Bullock's Lancer, Hutton's Lord Lincoln, and a pretty seedling, Barlow's Sunrise, which is described below. Mr. Douglas was second and Mr. Llewelyn third with rather small plants but good varieties. For three varieties Mr. Barlow was first with Hilton's President, Buck's George IV., and Crownshaw's Exile; Mr. R. Dean, Mr. Douglas, and Mr. Llewelyn having the remaining prizes in the order of their names. In the single specimen class Mr. Barlow was first, second, and third with Exile, the remaining prizes being secured by Mr. Douglas, who also obtained the special prize offered by Mr. George Smith of Edmonton for the best plant of Smith's Duke of Wellington.

There were few competitors for the extra prizes offered for fancy Auriculas, Polyanthuses, and double Primroses. Mr. Barlow staged the only collection of fancy Auriculas and secured the first prize. Mr. Dean was first with Polyanthuses, and Mr. H. Hooper, Vine Nursery, Bath, was second, Mr. Dean taking the chief prize for the only collection of Primroses. Mr. Douglas exhibited a good collection of hardy Primulas and was placed first, Mr. Llewelyn following with smaller plants.

CERTIFICATED VARIETIES.—Nearly all the seedlings enumerated in the special classes were honoured with certificates, and as they were mostly of exceptional merit both as regards colour and form we subjoin the following descriptions of their chief points and recommendations.

Heroine (Horner).—A grand self. Tube rich and smooth; paste perfectly circular, pure, and dense; petals stout and flat; colour dark maroon, firm, and rich. A model flower, with a magnificent truss of twelve finely formed flowers.

Conservative (Douglas).—An imposing white-edged variety of stout habit, with fine truss and flowers. Tube rich and deep, surrounded with a pure smooth paste; body colour dark but a little irregular, breaking slightly into the broad mealy edge. The general character of the flower resembles George Lightbody, which is evidently one of its parents, and in all probability it will occasionally become grey-edged.

Lord Salisbury (Mellor).—A self flower of considerable merit, with a deep rich tube, and small circular pure white paste, and broad chocolate maroon edge; darker and deeper than Campbell's Lord of Lorne.

Thetis (Horner).—Grey-edged; tube small and of good colour; paste clear and circular; body colour black, but runs very slightly into the edge. A neat, flat, and well-formed flower of much promise.

Orion (Horner).—An extremely handsome and distinct green-edged variety, with flowers of moderate size; the edge dark green; body colour nearly black; paste fine and circular; tube deep and open but rather light in colour. Habit vigorous.

Cyclops (Horner).—Another highly attractive and distinct green-edged variety. Pips seven or eight in a head, very large; tube deep and fine, dark yellow; body colour rich purplish maroon. A form of unusual vigour.

Rob Roy (Dean).—A green-edged variety, not particularly striking but very neat and pretty. Pips of medium size, neatly and regularly formed; paste good; body colour dark and clear.

Rev. F. Tymons (Dean).—A good grey-edged form with symmetrical pips of moderate size. Body colour almost black, in a broad regular band; paste even; tube deep and of good colour.

Mrs. Dodwell (Simonite).—An excellent white-edged variety. Pips circular in outline, flat; body colour a bright purplish blue, clear, and well defined, with a pure paste and deep tube. Habit robust and peduncles stout. Very distinct and promising.

Mrs. Douglas (Simonite).—A handsome self, an evident improvement on Turner's Chas. J. Perry, surpassing the latter in size and the brighter body colour; the tube is also deeper and the colour darker. A stately plant and striking flower.

Titian (Turner).—An alpine variety of unusual merit. The pips are large and finely shaded with bright reddish-crimson. Very symmetrical in form, perfectly flat, and altogether an admirable flower.

Unique (Turner).—Another nearly equally handsome alpine, with very large pips shaded with bright purple, and with a deep clear yellow tube.

Sunrise (Barlow).—A very distinct and beautiful seedling gold-laced Polyanthus. The flowers are not very large, but the gold lacing is bright and the body colour a rich crimson. The plant is also extremely floriferous, the flowers being closely placed in the heads.

We have received the following letter describing the general appearance of this Show:—

"One of the prettiest shows at which I have ever had the good fortune to be present was held last Tuesday at South Kensington. Auriculas of course formed the main feature of the Show, but numbers of other flowers were represented, and every taste seemed consulted. I do not profess to know much about Auriculas, and as my *confrère*, 'D. Deal,' was present, and he certainly does know a great deal about them, I will leave to him to comment on the varieties in next week's Journal.

"The Auriculas and Polyanthuses were arranged on a long table, which went the whole length of the great conservatory, and a splendid sight they formed. Rev. F. D. Horner, as usual, carried all before him, but Mr. Douglas pressed him close, and in one class he was excelled by Mr. Pohlman of Halifax. All the great Auricula growers were present, and as judges appeared to have a hard task set them. A new Auricula grower made his *début* in the person of Mr. Fellowes, the roarian rector of Wimpole; he secured one first prize. At the west end of the conservatory Mr. Barr filled a large table with a grand collection of Daffodils and Narcissus. Empress and Emperor, two of the finest, were not represented, but nearly all the others were, including a new bicolor called Primulinus. Mr. Standish of Ascot showed thirty-six blooms of Gardenias, which were grand, one being over 4 inches in diameter. Messrs. James Veitch & Sons contributed a magnificent display of Ghent Azaleas in small pots, and Clematises. Mr. Robert Parker of Tooting exhibited a fine specimen of Rhododendron Countess of Haddington. Mr. Hooper of Bath had some very grand Pansies, while Mr. Cannell showed huge baskets of Pansies, including splendid examples of Robert Burns, Chieftain, and Magpie. Mr. Llewelyn also sent a basket of Pansies, Lord Beaconsfield, purple, being splendid; while very bright were New Guinea, yellow; and William Barley, white, was also attractive.

"But the grandest part of the Exhibition in my eyes was the class devoted to Roses. It is true there was no competition, but that did not affect the beauty of the Roses exhibited by Mr. George Paul. The class was for twenty Teas in pots. I think I never saw a fresher or more lovely lot of Teas gathered together. The beauty of the plants shown was that many of them were varieties that are rarely seen in perfection out of doors. Perfection de Montplaisir for instance, which is so shy a bloomer in the open, was, under the fostering care of Mr. Paul, staged in great excellence. This was the finest specimen shown, but Catherine Mermet, though not so freely flowered, was equally good if not superior to the former. I never saw finer blooms of this lovely variety. Souvenir d'un Ami was also very good, but perhaps one of the most attractive was the old favourite Madame de St. Joseph. The colour of this was so lovely, so deep, and so beautifully shaded that it won great admiration. Marie Van Houtte was very faint in colour, but Louise de Savoie and Le Mont Blanc, those very shy bloomers, were both good. Madame Margottin and Marie Guillot were above the average. The worst in the collection were Homère and Bougère. Marshal Niel was not represented in pots; but superior cut blooms were shown in baskets, and evoked the admiration of all.

"The Show was altogether a most charming one, and as the first of the kind I have seen was a great pleasure to—WYLD SAVAGE."

In addition to the above it is only necessary to mention that Messrs. Williams contributed an extensive and handsome group of Orchids and other choice plants. Messrs. Osborn a group of fine-foliage and flowering plants, and Mr. Aldous a somewhat similar group. Messrs. John Laing & Co., Forest Hill, sent specimens of the handsome new Azalea Madame Jean Nuytens Verschaffelt; and Messrs. Dickson & Co., Pilrig Nurseries, Edinburgh, exhibited specimens of Saxifraga Wallacae, one plant only two years old being over 2 feet in diameter, and flowering most profusely. All these groups and miscellaneous exhibits, together with a large collection of Auriculas from Chiswick, contributed greatly to the success of the Exhibition.

SMALL BIRDS v. GOOSEBERRY AND CURRANT BUDS.—In reply to "J. S. W.," I think it wants no better proof of trees being sensibly injured than to see them entirely stripped of all their buds. Some seasons we are troubled with caterpillars, but no one will ever make me believe that the birds pick out all the buds for the sake of the eggs or larvae of insects that may be on the trees. If so, why are the crops of birds always found full of buds? That there are insect-eating birds

we must all admit, but not among the bullfinches. I wish the sparrows, my greatest enemies amongst the buds, were as rare in this neighbourhood as the bullfinch, then I should experience a little less labour and anxiety.—F. H. FROUD.

MR. MCINTOSH'S GARDEN AT DUNEEDAN.

FREQUENT allusions to this garden have been made in the *Journal*, and its beauty in June, when the *Rhododendrons* were flowering, has been fully described. The remarkable manner in which *Lilium auratum* is grown has also been noticed, the plants reaching more than 11 feet high, a sight which the late Mr. Fortune has admitted he never saw in Japan. The *Conifers*, few in number but exceptionally fine, have been referred to; the largest, *Picea magnifica* and *Cupressus Lawsoniana erecta viridis*, to be probably found in a private collection, being there, with others of great merit; and the singularly complete collection of *Zonal Pelargoniums* which Mr. McIntosh, as President of the *Pelargonium Society*, has formed has had worthy recognition; but public reference has not, I think, been made to the garden in spring, yet the flower beds at the present time are so beautiful that they cannot be passed in silence. They are not numerous, there being perhaps thirty of them; but they are of good size, and about twenty of them filled with *Hyacinths*, and the remainder with *Tulips*, produce an effect that cannot be equalled during the summer months. For the planting of the beds four thousand imported *Hyacinth* bulbs were employed, about one-third of the varieties being double, and as the colours are carefully arranged, and each spike supported with the same care as plants grown in pots, the display is highly imposing and the fragrance delightful. Instead of sticks that are usually employed for supporting the spikes straight 2-foot lengths of rather strong galvanised wire are used. These at a short distance from the beds are invisible, but when on a closer approach they are seen their appropriateness is so manifest that they are the reverse of unsightly. Supports of this nature might with advantage be employed for other flowers in many gardens where much time is involved in making sticks that perish in a season, the galvanised supports lasting a lifetime. The *Tulip* beds have a very rich appearance. All know of the glowing brilliancy of a mass of *Vermillion Brilliant*; this is perhaps the brightest of all, but not the best for bedding, for *La Belle Alliance* is also rich, and its large flowers, broad foliage, and the sturdiness of the plants constitute it the most valuable for this purpose. *Chrysolora* is the best yellow, pure bright and spotless with large blooms. A rosy crimson variety, *Molière*, is much admired for its pleasing colour, but it is a little irregular, and *Wouwerman* commands notice by its remarkable richness—an indescribable purplish crimson, unlike any other flower, but somewhat resembling *Irisine Herbertii* in its best condition.

Mr. McIntosh is also forming a choice collection of hardy fruits, every new Plum, Pear, and Apple of repute being purchased as soon as it is obtainable. In this garden Plum blossom is plentiful, Pear blossom scant, and Apples promise to be fairly well furnished with flowers. Small fruits give promise of full crops. Vines, too, of which all the leading varieties are included, are in a very promising condition, and the Peach crop under glass is good, but outdoors a complete failure. Fruit culture at Duneedan is a work of difficulty owing to the light sandy soil and wet subsoil impregnated with iron, and it is only the readiness of the owner to purchase soil from long distances and the cultural care of his gardener, Mr. Taylor, that success can be achieved in this department. Mr. McIntosh is an earnest horticulturist, and his garden is not only enjoyable but instructive.—A VISITOR.

MEAL ON AURICULA LEAVES.

WE cannot better reply to "A GARDENER" who seeks information on this subject, than by publishing the following report of the investigations of Dr. M. C. Cooke, which appeared in part 9 of vol. v. of the *Journal of the Royal Horticultural Society*, issued in December last.

"Under a low power of the microscope *Auricula* leaves are seen to be regularly sprinkled, at equal distances all over the surface, with uniform white clusters of a mealy-looking substance, except that all around the margin of the leaf the number of these clusters is largely increased, so that in that portion they are closely crowded together. The uniformity in size of the clusters and their uniform distribution over the surface is very marked in character. In order to ascertain

the nature of this meal Dr. M. C. Cooke removed a portion and submitted it to examination under a quarter-inch objective, with a magnifying power of about 400 diameters, and found it to consist of short broken needle-shaped crystals mixed with small granules; the addition of ordinary spirits of wine did not dissolve them, but they were soluble in benzine. He did not then endeavour to ascertain if the crystals were reformed on the evaporation of the benzine. In the next place a strip of the cuticle of the leaf with the mealy clusters *in situ* was removed and examined with the same quarter-inch power, by means of which it was found that, although the clusters were very uniform in size and equal in distribution, they appeared to have no relationship with the stomata, were not collected at these openings, and evidently were in no sense to be attributed to exudation from the stomata. Further manipulation and dissolving away the crystals demonstrated that each of the clusters had a nucleus in the form of a globose glandular hair with a very short stem. These glands occupied the centre of each cluster of meal, were quite empty and collapsed, with the broken crystals adhering to the surface covering them, and converting them into the appearance of clusters of meal. Thus far, then, the examination showed that the regularity of the disposition of the meal was due to the presence of globose glandular hairs, around which the meal was collected in the form of broken needle-shaped crystals; and it may fairly be assumed that this meal is at first contained as a secretion within the glands, ultimately escaping and crystallising upon the surface.

"In order to ascertain the chemical characteristics of this substance, he forwarded the small quantity which remained to him, after his experiments, to one of the expert chemists in the laboratory of the Inland Revenue, and he thus reports the result of his investigation: 'The meal on the *Auricula* leaves consists of crystals which appear to be coated with a waxy matter. On removing the meal and treating it with alcohol, strength 50 o. p., all dissolve, but on evaporating the alcohol beautiful acicular crystals rearrange themselves in a stellate manner. I believe the meal to be an alkaloid of some kind; the crystals are very fine. It is soluble in ether, soluble also in weak hydrochloric acid on heating, but precipitated on cooling. With a better supply of leaves, and more time allowed to me for the examination, I could probably have added to this report, which may be resumed with a better supply of material.'

ROYAL BOTANIC SOCIETY.

APRIL 21st.

NOTWITHSTANDING the favourable weather, the second spring Exhibition of this Society, which was held upon the above date, was not so well attended by exhibitors as might have been expected. The entries in the various classes were comparatively few, the excellence of the display being chiefly due to the numerous extensive and handsome groups contributed by the nurserymen, the collections of plants exhibited by Messrs. Veitch, Williams, Bull, Paul, and the General Horticultural Company contributing very largely to the success of the Show, and attracting much admiration from the visitors.

Roses in pots were exhibited by Messrs. Paul & Son, The Old Nurseries, Cheshunt, in admirable condition. They were the only exhibitors in the class for nine specimens, and were awarded the premier prize. In addition an extra prize was awarded for a group of excellent Roses. The varieties were the same as those alluded to by "WYLD SAVAGE" under our report of the *Auricula* Show, and therefore need not be repeated here. The same firm was awarded the first prize for six new Roses sent out in 1878 and 1879. The varieties exhibited were *Rosy Morn*, *Louis Doré*, *Eugène Verdier*, *Mrs. Laxton*, and *Madame Eugène Chambeyron*, all Hybrid Perpetuals, and the *Tea Rose Innocent Pirola*. Five baskets containing about ninety fine *Maréchal Niel* blooms were also shown. Mr. Walker of Thame, Oxon, sent four boxes of cut Roses, comprising numerous varieties represented by some of the freshest and brightest blooms possible. *Maréchal Niel* was of unusual size and substance, one box containing thirty-two handsome blooms. He also sent a box of President Strawberries, the fruit being of great size and excellently coloured. An extra prize was deservedly awarded for these fine exhibits.

Stove and greenhouse plants were not very numerous nor in first-rate condition. Messrs. B. Peed & Son, Norbury Nurseries, Streatham, obtained the first prize for twelve plants with fair specimens of *Tremandra verticillata*, *Erica elegans*, and *Azalea Napoleon III.* among others. Mr. G. Wheeler, gardener to *Louisa Lady Goldsmid*, Regent's Park, was the only other exhibitor in this class, securing the second prize with an even collection, including a large vigorous specimen of *Hibbertia Rhoeo*, and two healthy plants of *Clerodendron Balfourianum*. *Azaleas* were comparatively

few, but Mr. Wheeler staged a very good first-prize collection of six plants in 12-inch pots. *Azalea magnifica* and *A. Charmer* were very profusely flowered. The second prize went to Mr. Ratty, gardener to B. Thornton, Esq., The Hoe, Sydenham, with good varieties, but sparsely bloomed. Messrs. B. Peed & Son secured the first prize in the nurserymen's class for six *Azaleas* with very even and well-flowered specimens; Mr. H. James, Castle Nursery, Norwood, following with rather loose plants. *Cinerarias* were poorly represented, only one really good collection being staged—namely, the one from Mr. John Wiggins, gardener to H. Little, Esq., Hillingdon Place, Uxbridge, who staged nine remarkably even and well-flowered specimens. The same exhibitor was awarded the first prize for the only collection of nine *Pelargoniums*, of which the best was *Kingston Beauty*. He also secured an extra prize for a miscellaneous collection of plants, and the first prize for six seedling *Amaryllises*, some of which were of good form and bright in colour, especially *Princess Dagmar*, *Firefly*, and *Milla*. *Titians*. *Auriculas* were represented by two collections in the open class for twelve. Mr. C. Turner, Slough, was placed first with even and well selected plants. Mr. Douglas, gardener to F. Whitbourn, Esq., Loxford Hall, Ilford, following closely, but his plants were rather more drawn than Mr. Turner's.

Extra prizes were awarded to the following exhibitors:—Messrs. Veitch and Sons, Chelsea, for large groups of choice plants; Mr. W. Bull, Chelsea, for a collection of Orchids and new plants; Mr. B. S. Williams for a handsome group of rare and beautiful Orchids and other plants; Messrs. Barr & Sugden, Covent Garden, for a collection of Daffodils; the General Horticultural Company for a large group of fine-foliated plants and Orchids, including *Odontoglossum vexillarium* and two exceptionally handsome specimens of *Arpophyllum giganteum*, one bearing over a dozen long cylindrical spikes of its small purplish flowers; Mr. H. Heims, gardener to A. Philbrick, Esq., Q.C., Avenue Road, Regent's Park, for a large group of fine Orchids; Mr. Turner, Slough, for a collection of *Auriculas*; Mr. Hooper, Vine Nursery, Bath, for Pansy blooms; and to Messrs. Carter & Co., for some pans of remarkably handsome Pansies, the varieties *Admiration*, *Blue Gem*, *Maggie*, *Blue Beauty*, *Lutea grandiflora*, and the superb new variety *Prince of Wales*, a distinct form with large well-formed flowers of a deep rich crimson colour and a bright yellow eye. Messrs. Standish exhibited the enormous flowers of *Gardenia intermedia* they had on the previous day at Kensington and referred to in our report; and Mr. Howard of Southgate sent specimens of the useful yellow *Marguerite*, *Chrysanthemum frutescens* *Étoile d'Or*. A large number of new plants were staged, but the certificates had not been awarded when our reporter left the Exhibition.

NOTES AND GLEANINGS.

A MEETING of the Executive Committee of the NATIONAL ROSE SOCIETY was held at the rooms of the Horticultural Club on the 13th inst., Geo. Baker, Esq., Vice-President of the Society in the chair, when various arrangements connected with the forthcoming exhibitions of the Society were made. Judges were selected, and amongst other decisions arrived at were the following:—That on the day of the Crystal Palace Exhibition a *déjeuner* would take place at one o'clock, open to any members of the Society who might wish to join, and that certain members of foreign Rose societies would be invited as guests; that silver-gilt and silver medals of the Society would be presented to the Society of Rosarians at Antwerp, and to the Society of Brie-Comte-Robert, to be allocated according to the wishes of their respective Committees—acts of international courtesy which we are sure will be appreciated, especially as they are in response to offers of a similar character made from the President and Secretary of those Societies. Two errors having unfortunately crept into the schedule through printer's carelessness, we are requested to state that in class 21 it should be eight distinct instead of six, and in class 22, twenty-four distinct instead of eight; those classes are correct in the schedule issued by the Crystal Palace Company. Lovers of Roses should remember that by the arrangements made with the Crystal Palace Company members will have the privilege of admission to the Exhibition for half an hour before the general public.

— WE are informed that the EXHIBITION OF SPRING FLOWERS to be held on the 26th inst. in the Vestry Hall, Turnham Green, is expected to be a very excellent one, as nearly all the chief metropolitan nurserymen and growers of plants for market will contribute to the display. The Royal Horticultural Society's gardens at Chiswick (which are close to the place of Exhibition), will be open to visitors to the Show, who will have an opportunity of seeing the gardens in their most attractive garb, the great collection of fruit trees now being in blossom. Mr. Barron is the manager of the

Show, and from whom tickets and all information relative to the Exhibition can be obtained.

— AMONG the numerous Orchids exhibited by Messrs. Veitch & Sons at Kensington on the 13th inst. was a specimen of *HUNTLEYA MELEAGRIA*, which was honoured with a first-class certificate, and although not new it deserves a more lengthened notice than we were able to give it in our report. This plant has been known as *Batemannia meleagria*, and is clearly allied in structure to the genus *Zygopetalum*, while in habit it resembles the *Bolbos*. The flowers are nearly 4 inches in diameter, the sepals and petals being of a brownish tinge marked with white, and the labellum almost white. The specific name *meleagria*, which signifies guinea-hen, applies to the colouring of the flowers, but it is not so appropriate in this case as in the common *Fritillaria meleagria*. The genus comprises two or three species, natives of Tropical America, and epiphytal in habit.

— ANOTHER very remarkable plant that merits further notice is *ANTHURUM ANDREANUM*, a peculiarly showy Aroid exhibited by Mr. Linden of Ghent, to which a first-class certificate was also accorded. In the colour of the spathe this species bears some resemblance to *A. Schertzerianum*, but it is brighter, of a shining polished appearance, and the surface very strangely indented. The leaves have heart-shaped blades 9 to 10 inches long and 6 to 7 inches broad, dark green, and supported on petioles over a foot in length. The plant was introduced to Europe from Colombia in 1877.

— A COMMUNICATION from Brussels states that when Her Majesty Queen Victoria recently visited Laeken, she was conducted by the King and Queen of the Belgians round the Royal Gardens, and minutely inspected the magnificent conservatory, which is the finest structure of its kind in Europe, and appeared much impressed with the remarkable Palms, Tree Ferns, and other plants, as arranged by Mr. Wills the English decorator. After inspecting the conservatory Mr. Wills was presented to Her Majesty by the King, and was graciously complimented on his success. Bouquets for the Royal party were sent from London by a special messenger of Mr. Wills, in obedience to His Majesty's command.

— A CORRESPONDENT writing concerning SPARROWS & SEEDS AND BUDS states:—"If Mr. Froud (see page 274) will adopt the plan I pursue he will, I think, save much powder and shot. I place a few short sticks round the seed beds or down the sides of the Pea rows; start at one stick with a bobbin of black cotton, and take it from stick to stick, crossing and recrossing the bed or rows with it, keeping it about 2 inches from the ground; the birds do not see the cotton, which they fly against, and it frightens them away."

— "B. N. G." writes as follows:—"The lovely Hoop or Petticoat Narcissus (*NARCISSUS BULBOCodium*) is a dwarf species with rich golden flowers, and invaluable in small pots for associating with Primulas, Cyclamens, Scillas, Crocus, &c., in conservatories. It will not stand hard forcing, and should not be forced into flower too early, or else the bulbs will be found to bloom irregularly instead of producing a good effect at one time."

— SOME of Mr. Catlin's excellent variety of *ZONAS PELARGONIUMS* are flowering well in one of the houses at Messrs. Carters' nursery at Perry Hill, and they deserve notice for the extraordinary size of the flowers and purity of the colours. Edgar Catlin is a handsome salmon scarlet; Lizzie Smith, a fine rose-tinted variety; Leona Dare, a good salmon pink; Fanny Thorpe, the centre of similar colour to the last, shading to white on the margins of the petals; Fanny Catlin, beautiful bright salmon, very large flower; Edith May, pink shaded with scarlet. The flowers of these varieties are not only unusually large, but highly symmetrical in form and of good substance.

— IN the house devoted to succulent plants at Kew, *CEREUS FLAGELLIFORMIS*, the Rat's Tail Cereus, was flowering freely last week. The plant is grafted upon *Cereus rostratus*, which is trained up the rafters, and from one of the stems a large cluster of the peculiar cylindrical whip-like branches a yard or more in length hang perpendicularly downwards. Upon these are borne the rather large bright pink flowers, which like others of the family only compensate for their brief duration by their showiness and brightness of colour. *Cereus Mallisonii* was also flowering, both on its own roots and grafted on *C. MacDonaldiae*, the latter appearing to better advantage, though the flowers were equally fine. The colour in this species is a very rich crimson.

— AT the Melbourne Nursery, Anerley, one of the establishments now possessed by the General Horticultural Company, DRACÆNAS are at the present time in excellent condition both as regards vigour and colour. The able manager of that nursery, Mr. Bause, has, it is well known, paid especial attention to those plants, the numerous, distinct, and handsome forms he has produced being greatly appreciated by cultivators generally. Among so many that are good it is difficult to particularise varieties of especial merit, but Bansei, Willsi, Fredericki, Caustonii, and Anerleyensis are some of the most attractive. The variegated form, *D. terminalis alba*, is also a valuable plant for decorative purposes, as a specimen of good size can be grown in a 48-pot, and the pure white margin forms a striking contrast with the dark green portion of the leaf.

— MANY other plants in the same nursery were also noteworthy, especially CALADIUM PEBLE DE BRAZIL, one of the most distinct and beautiful forms in commerce. The leaves are of great size, semi-transparent, membranous in texture, of a whitish colour, very lightly tinged with pale pink, and marked with bold bright green veins. This variety is quite unique in character, and the peculiar delicacy of the colour suffusing the leaves render it very charming.

— A FINE specimen of the handsome Brazilian shrub RUDGEA MACROPHYLLA was recently flowering in one of the houses. The flowers are tubular with four or five lobes, of a creamy white colour, and closely packed in dense terminal heads that contrast very pleasingly with the large dark green leaves. Small plants of this species are useful for decorating the stove, where they thrive admirably in a soil consisting of good loam, peat, and sand.

— IN the house devoted to ANTHURIUMS there was a remarkably beautiful display, nearly five hundred spathes of *A. Schertzerianum* being fully expanded. Many excellent varieties are included in the collection, some being noticeable for the great size of the spathes, and others for the intensity of the colour, a few combining both these qualities. The white form of *A. Schertzerianum* comes very pure in colour, but it is disfigured by the number of diminutive spathes that are produced on the spadix, giving it the appearance of deformity.

— IN one of the houses at the Stanstead Park Nursery are two remarkably good NEW AZALEAS, which though of small size are bearing a great profusion of large flowers. They are both of compact habit, with small dark green leaves. Madame Jean Nuytens Verschaffelt has excellently formed flowers, white with a yellowish tinge in the centre; while the other, named Empress of India, has flowers with a bright rosy pink centre and streaks, the margin being white. They are exceptionally floriferous and fine.

— IN reference to the use of SEA SAND Mr. J. Muir writes as follows:—"I quite agree with those who think this substance is useful for all garden purposes where sand is wanted. Close to the garden here are many hundreds of acres of land covered with sea sand, and this I always employ for potting purposes, storing roots in during winter, &c., and I always find it good in all respects. No doubt in many places it could be had much cheaper than silver sand, and it would be found equally as useful."

— "W. J. M." writing from Clonmel, describes a fine specimen of DIELYTRA SPECTABILIS at Birdhill. The plant is 5 feet high and 3 in diameter, and is profusely laden with flowers. The late Mr. Fortune esteemed the Dielytra as one of his most successful introductions, and he noticed with special pleasure the many examples of it in cottage homes and gardens.

PORTRAITS OF NEW AND NOTABLE PLANTS.

CYANANTHUS LOBATUS. *Nat. ord.*, Campanulacæ.—"This rock plant is certainly one of the most beautiful of the alpine Himalayan herbaceous plants, forming broad patches on the bare mountain flanks at elevations of 12,000 to 14,000 feet from Kumaon eastwards to Sikkim, enlivened with a profusion of brilliant violet-blue horizontal or nodding flowers. It was discovered in Kumaon and Nepal by Wallich's collectors in 1821, and was introduced into the Horticultural Gardens in 1845 by that gallant soldier and accomplished botanist, General Munro, C.B., whose lamented death took place a few weeks ago."—(*Bot. Mag.*, t. 6485.)

LOMICERA TOMENTELLA. *Nat. ord.*, Caprifoliacæ.—"L. tomentella, a rigid bush 10 to 12 feet high, is a native of the interior valleys of the Sikkim Himalaya, at elevations of

8000 to 12,000 feet. The specimen figured was from a plant cultivated at Kew from seeds; it flowers annually in July."—(*Ibid.*, t. 6486.)

EICHOORNIA AZUREA. *Nat. ord.*, Pontederiacæ.—"A common tropical South American water-plant, extending from South Brazil to Jamaica. It varies greatly in the size and form of the leaves and length of the petiole, and is found either floating or rooted and erect in the muddy bottom of shallow water. It was introduced into the gardens of the Royal Botanic Society, Regent's Park, from Brazil, and flowered there in July of last year."—(*Ibid.*, t. 6487.)

SENECIO SPECIOSUS. *Nat. ord.*, Compositæ.—"It has a wide range in South Africa, from the Cape of Good Hope itself to Natal, and, as Mr. Brown remarks, its supposed Chinese origin is probably due to its having been brought by one of the homeward-bound China ships which regularly touched at the Cape. According to the "*Hortus Kewensis*," it was introduced into England about 1789 by G. Slater, Esq."—(*Ibid.*, t. 6488.)

XIPHIUM KOLPAKOWSKIANUM. *Nat. ord.*, Iridacæ.—"It grows plentifully in fields near Wernoeje, in Turkestan, and was named by Dr. Regel in compliment to General Von Kolpakowsky."—(*Ibid.*, t. 6489.)

CYPHEPIDIUM SPICERIANUM. *Nat. ord.*, Orchidæ.—"Received from India some time ago by Mr. Spicer amongst a mixed collection of Orchids, without any indication as to its habitat. When it flowered for the first time a bloom was sent to Prof. Reichenbach, who named the plant in compliment to the gentleman through whose instrumentality it was introduced into British gardens, and for whom Messrs. James Veitch and Sons purchased the stock."—(*Ibid.*, t. 6490.)

THE POLYANTHUS.

MR. JOHN SLATER tells us the parent of the Polyanthus was the Primrose, from the seed of which an Oxlip was produced; this by careful cultivation produced the Cowslip, and from this arose the Polyanthus. How strange he should have made such a mistake. The Cowslip is a true species, equally as distinct as the Primrose. It is indigenous over a great portion of Europe, and in some parts is common where the Primrose is absent, and *vice versa*. In districts in the north of Scotland which I have visited I failed to detect it where the Primrose was abundant, but in Norway it is said to range as far north as the Primrose.

The Oxlip is a natural cross between the Cowslip and Primrose. I know a wood in this neighbourhood where Oxlips of every gradation, from true Cowslips to true Primroses, are to be found, and it is so typical a case of the origin of a truly wild hybrid that I may perhaps be allowed to describe it. On the outside of the wood there are numbers of true Cowslips, and in the centre of it are true Primroses, while between the two are the Oxlips. This is speaking generally, as some Primroses are intermixed with the Oxlips. What is interesting, too, is that many of the Primroses are smaller than the normal ones, and of a beautiful golden colour. Amongst these hybrids are some flowers which are large, and exactly resemble normal Primroses both in size and colour, but borne in trusses on foot-stalks like Oxlips, and there are others of every variety from these to true Cowslips, many of them bearing single flowers as well as trusses on the same plant. The majority of them are of a fine golden yellow.

The Polyanthus is generally admitted to be a variety of the Cowslip. Mr. Slater says the Polyanthus does not produce seed freely, and also when raised from seed a very large proportion come what is termed pin-eyed. There are two forms of flower in the Primula family which are called by Polyanthus growers thrum-eyed and pin-eyed; this difference consists in the length of the style and the position of the pistils and stamens. The thrum-eyed have the anthers in sight at the top of the corolla, and the stigma (pin's head) half way down the tube, and of course out of sight. The pin-eyed show the round end of the stigma, which resembles the head of a pin at the top of the tube, while the anthers are midway down and invisible. Naturally these two forms are about equally divided, but amongst Polyanthus growers the pin-eyed form is entirely discarded. Why such a difference in the generative organs should obtain amongst Primroses and their kindred species is very singular, but has been found materially to affect their fertility. I am aware that there are other plants which have long-styled and short-styled flowers in the same manner as the Primulas and are scientifically known as heterostyled, but I wish to confine my remarks to the Polyanthus. And now as to fer-

tilisation. The Polyanthus family are bisexual, but in consequence of the position of their organs cannot fertilise themselves; and what is more, the union of two thrum-eyed or two pin-eyed forms, or artificial fertilisation of a flower with its own pollen, is not nearly so fruitful as with a long-styled and a short-styled flower—that is, a thrum and a pin-eyed one. May not Mr. Slater's difficulty in getting his Polyanthus to bear seed have arisen from his having attempted to cross two thrum-eyed flowers? in which case also it is probable the majority of plants raised (if any) from such a union would be pin-eyed. —F. BOYES.

P.S.—I shall be glad if Mr. Slater or anyone else will tell me where I can get a few good varieties of gold-laced Polyanthus either pin-eyed or thrum-eyed.

DESTROYING GOOSEBERRY CATERPILLARS.

It may be of service to your readers if I give my experience of the effect of Fir-tree oil on Gooseberry caterpillars. I commenced using it at the end of May or beginning of June, half a pint of the oil mixed with 2½ gallons of soft water. The trees at the time were much infested with the caterpillars; one-half of them I syringed with this mixture, and the other half I watered with hellebore tea out of a common watering can with a fine rose. The caterpillars on the whole of the trees disappeared in a day or two, but within a month they reappeared on the trees that had been syringed with the Fir-tree oil, whilst those that had been watered with the hellebore tea were left untouched for the remainder of the year. I destroyed the caterpillars again with the Fir-tree oil, but they reappeared in August. This year I intend on the first fine day as soon as the fruit is set to water all my Gooseberry trees with hellebore tea. I know many people will object to using this on account of its poisonous nature, but if the trees are only watered with it early there need be no fear, as I ate the fruit last year and felt no evil consequences.—BAYARD.

CAPE GARDENS.

ONE great charm of Cape Town city and village surroundings is the presence of gardens, although they assume a Dutch style. Almost the only parallel to it is the Mormon institution of a homestead embedded in the orchard. To see the model one must visit the delightful Hague in Holland. It would, however, be in vain to expect to see elsewhere that faultless cleanliness and that exquisite order observed in the dwelling and garden of a modern Dutch citizen. Still, at a distance the appearance of a Cape farmstead, with its well-filled garden and its Vine-clad slopes, is very attractive.

The Dutch in olden times were patrons of flowers, vegetables, and fruit, and we Britishers are not a little indebted to Holland for the introduction of some of these useful and pleasant products. The Tulip mania was only one exponent of that love of Nature that makes the world akin. It was natural, therefore, that the old Dutch settlers at the Cape should attend to their gardens. They had one eye to ornament and another to the practical. Thus the picturesque is not neglected while honest crops are sought. Of course districts the longest peopled betray these characteristics the more strongly. Thus we observe that 687 acres were in orchards about the Paarl district in 1878; and even the limited area of Stellenbosch had 367 devoted to such a purpose. Towns are few and small—more village-like than anything usually found in colonies.

All the favourite flowers and fruits of Europe, from those with wintry snows and those basking in the sun of the Mediterranean, may be seen at the Cape, and may be grown by the British emigrant in the little farms supplied to him by the Cape Government on such easy terms, and in a climate as favourable to his own health as to their culture. It is not hot enough, however, to grow Pine Apples and Bananas, though good for Oranges. There are localities in the colony where only the out-of-door products of the Scotch highlands could be raised. There the Gooseberry and Currant, shy of the sun, flourish beside the Cherry. Lower down from these heights the level of the Apple, Strawberry, and Raspberry is gained; lower still the Grape, the Peach, the Nectarine, the Melon, the Olive, the Fig, the Pomegranate, the Mulberry, and the Orange grow to perfection.

The Cape is the very land of native flowers and gorgeously blossoming shrubs. The weird-looking Aloe attracts notice at first landing. The vast family of Heaths is well known. There

are three hundred varieties of Fig Marigolds; countless Irides and some Orchids, with lovely Asters, Mallows, Lobelias, and Everlasting Flowers. The native fruits themselves are not to be quite despised, though, absurdly enough, European names are given without European qualities. The native Apple is not an Apple, nor is the native Orange an Orange. There are Plums not larger than Peas. The so-called Natal Orange has poisonous stones but a sweet acid pulp, much admired by the wandering elephant. The wild Almond requires a long soaking in water before being wholesome for man.

The Vine is after all the prince of Cape gardens; in fact, it forms the institution apart from the garden, even the vineyard. Out of 8588 acres in Grapes, the Paarl district boasted the possession of twenty millions of Vines, and Stellenbosch of fifteen millions. The Grapes are of many varieties, and are relied indeed in that warm climate. There were three million pounds of dried Grapes in 1878. There is no reason why fruits in large quantities should not be exported to Europe from the gardens of British settlers in the new agricultural areas of the Cape described by the Cape Emigration Agents Blomfield Street, London, E.C. But a great quantity of wine, sold retail at 3s. a gallon, and a million gallons of brandy, find prompt consumption among white and coloured people in the colony itself to too great a spread of intemperance among the native workers. The Pontac red, the Steen Grape hock, and the Madeira-like hanepoot are the favourite varieties. Cape wines for exportation are usually objected to because of their large admixture of spirit, which affects the native flavour.—F. R. G. S.

NARCISSUS HORSFIELDI FOR POTS.

THIS lovely Narcissus is, perhaps, one of the finest of the border section; nevertheless it is suitable for culture in pots, and is very attractive amongst other bulbous plants in the conservatory. It is a large-flowering form, having an immense yellow trumpet with large white petals. These border Narcissuses are easily grown, and should be potted towards the end of September or early in October. I cover the pots with ashes for a short time until plenty of roots have been made, the plants are then gradually exposed to the light, and placed in a cool house or frame where frost can be excluded. Five or six bulbs should be placed in a 6-inch pot, and must after the pots are full of roots be slowly brought forward. N. Horsfieldi is dwarf, and will not be more than 10 inches in height when not drawn with heat.—W. BARDNEY.

ORIGIN OF APPLES OF ESTABLISHED MERIT.

ONE of the most favoured culinary Apples of the present day is Warner's King, or The King Apple. Indeed it might with truth be called the favourite of its season. It takes a front place at all fruit shows, and usually the first prize for size and quality. It cannot be an old variety, and yet it has no published history; even that wonderful repertory of Apple lore, "The Fruit Manual," has nothing to say of its origin or history. Will some descendant or friend tell us who this particular Mr. Warner was, where he lived, and the date when he produced this splendid Apple? for we wish to render him due honour in "The Herefordshire Pomona," the next part of which will contain a beautiful coloured plate of the variety.

The Bedfordshire Foundling again has no history in books beyond what its name implies, and yet its reputation is widely established, for it has now become as great a favourite in France as it is in England. The same may be said of Hanwell Souring, Yorkshire Beauty, and the Summer Strawberry. "The Fruit Manual" is again silent as to the origin of the Carraway Russet, Golden Knob, or Kentish Golden Knob, and the White Nonpareil. If your readers will be good enough to communicate to your pages any information with reference to the history of any of these fruits they will confer a favour upon us, and a still greater favour upon the gentlemen who had the great good fortune to produce these valuable varieties; for the sole object of asking for it is to render them due praise in one of the most beautiful works of pomology that has been published of late years.—B.

ANEMONE FULGENS.—This is a charming plant for small pots, and does remarkably well for indoor decoration. Its easy culture and lovely scarlet flowers command for it a place. It is a good plan to order a few roots when the bulb list is sent in. They require to be placed in pots about the same time as

Hyacinths and Tulips, in a compost of loam, leaf soil, and manure. They should be placed after potting in a cold frame, and subsequently removed where they can be protected from frost. A succession can easily be maintained, but they succeed best when brought forward under cool treatment and close to the glass. This is a most suitable plant for the amateur's greenhouse.—W. B.

CARPET BEDDING.

As a great number of gardeners are now preparing plants for the decoration of beds in summer and autumn, and as we know by the inquiries we have had for information that this

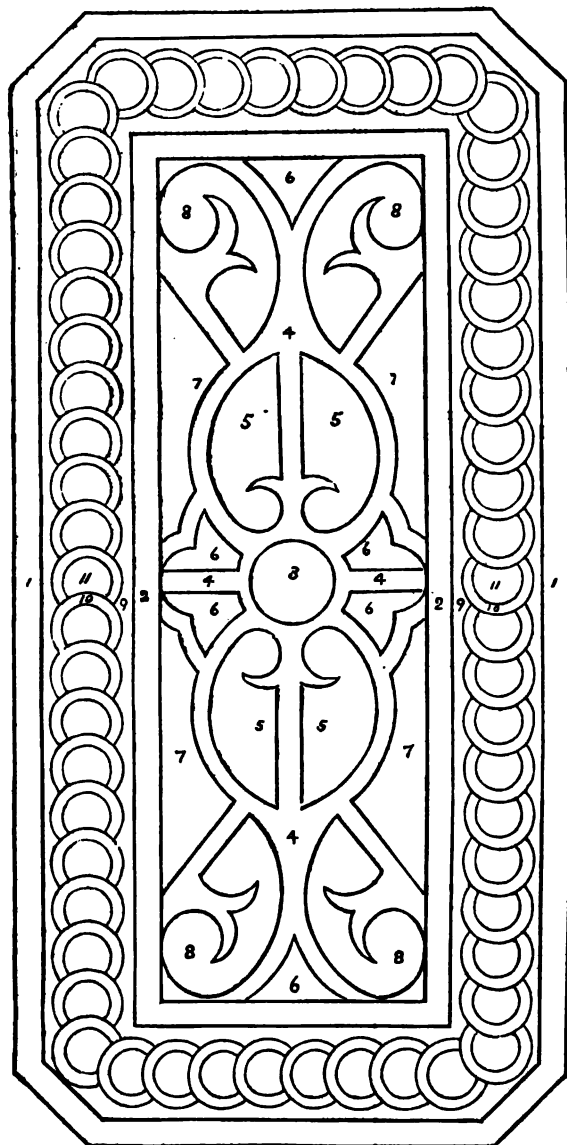


Fig. 45.

MODE OF PLANTING.

- | | |
|-------------------------------|-----------------------------------|
| 1 and 2, Echeveria, two rows. | 7, Alternanthera paronychioides |
| 3, Alternanthera amoena. | major. |
| 4, Mesembryanthemum cordi- | 8, Alternanthera magnifica. |
| folium variegatum. | 9, Herniaria glabra. |
| 5, Sempervivum montana. | 10, Alternanthera paronychioides. |
| 6, Antennaria tomentosa. | 11, Sedum glaucum. |

style of furnishing the beds has many admirers, the annexed plan, drawn by Mr. Graham of Hampton Court, with the proposed mode of planting, will be suggestive.

It will considerably improve Nos. 1 and 2 to plant a little Sedum glaucum amongst the Echeveria, and it will help to

keep up the earth of the bed. It is intended that No. 1 be raised about 5 inches above the grass, and No. 2 about 5 inches above that again, to form a terrace, having the chain on the lower and the pattern on the upper terrace. Those who wish a flat bed have only to plant No. 2 with either one or two rows of whatever they have most of, and it would also help to set the bed off if a place were left in the centre of No. 3 to insert a good Palm or other plant which could be renewed at pleasure. The size of the bed is 24 feet by 12 feet, but the design is appropriate for a smaller or larger surface.

IRISES.—No. 7.

SOME of the most beautiful Xiphions having been described, the true Irises next claim our attention, and as these are very numerous it will only be necessary to mention such as are especially remarkable either for their beauty or their historical interest. The chief distinctive character of the genus *Iris*, compared with the Xiphions it will be remembered, is in the form of the root, which is rhizomatous, and familiarly exemplified in the common German *Iris* of town gardens. The Irises are also generally of more robust growth and less fastidious as to soil and situation than their delicate relatives, although some, such as the handsome Japanese Irises (*I. Kämpferi*), are not very easily managed in many gardens. The flowers, too, are usually larger than the Xiphions, a few attaining a great size, but in diversity of colour and beauty they scarcely surpass them; yet a large number of the species are uncommonly handsome, and some have been not inaptly designated "gorgeous." However, notwithstanding their attractions comparatively few enjoy a moiety of the popularity they merit.

The Irises are divided into six sections, which are founded upon characters of the falls and standards, the presence or absence of beards or crests constituting the chief distinctions. These sections vary considerably in the number of species they include, the Apogon division of beardless forms comprising quite one-third of the species, while the three smaller sections, *Hermodyctylus*, *Oncocyclus* and *Hexapogon*, only include eight species. The term *Hermodyctylus* is an old generic name, and under it is placed the peculiar Snake's-head *Iris*, *I. tuberosa*. This species is worthy of note as one of those known to the old writers, although from a decorative point of view it is quite worthless. It is curiously distinct from other Irises in the digitate tuberos root, which is, as Parkinson says in his "Paradise" "bunched or knobbed-out into long round rootlets like unto fingers." Both that writer and Gerard style it the "Velvet Flower de luce," and the latter author describes it thus—"The lower leaves (falls) that turn downward are of a perfect black colour, soft and smoothe as blacke velvet, the blacknesse is welte about with greenish yellow." It is a native of the Levant and flowers about the present time, but is scarcely worth cultivation except as a curiosity. This species is the sole member of the first section.

The next division, *Oncocyclus*, includes five species, marked by the possession of a thick rhizome, the standards being as large as the falls, and the latter slightly hairy. Of the forms in this group the most attractive is *Iris iberica*, the one represented in the accompanying faithful engraving. This remarkable plant bears flowers as strangely coloured and marked as can be imagined, and yet it possesses a peculiar kind of originality that is very pleasing. In habit it is very dwarf, rarely exceeding 10 inches or 1 foot in height from the ground to the apex of the standards. The flowers are of enormous size and borne singly on short stems. The standards are erect, somewhat roundish in outline, the margin being slightly undulated. They are pure white externally, the central ridge being slightly tinged with yellow near the base, while the inner surface is spotted with red. The falls are similar in form to the standards, but the margin is not undulated; the ground colour is yellow, over which dark reddish-purple veins are very closely reticulated, in the centre of each fall being an intensely dark blotch. The yellowish-brown stigmas are closely bent over the falls the upper portion being curiously humped and dark shining purple in colour. The plant is a native of the Caucasus, where it is found at elevations of 6000 feet and more, and was first introduced to this country about 1820. It succeeds well in ordinary light rich soil, and flowers about May or June.

Another interesting species in the same section is *Iris sumana*, the "Great Turkie Flower de luce," as it is termed by Parkinson, who gives the following quaint but lucid description:—"It hath divers heads of long and broad fresh greene leaves folded within one another at the bottome, as all other of

the Flower de luces are. From the middle of some one of these heads riseth up a round stiffe stalke two foote high, at the top whereof standeth one flower, the largest almost but the rarest of all the rest, consisting of nine leaves, but of the colour

almost of a snake's skinne it is so diversely spotted." The flowers are of great size, the falls and standards being similar in form and colouring, the spots and streaks of a purptish tinge being abundant on a lighter ground colour. It was introduced to

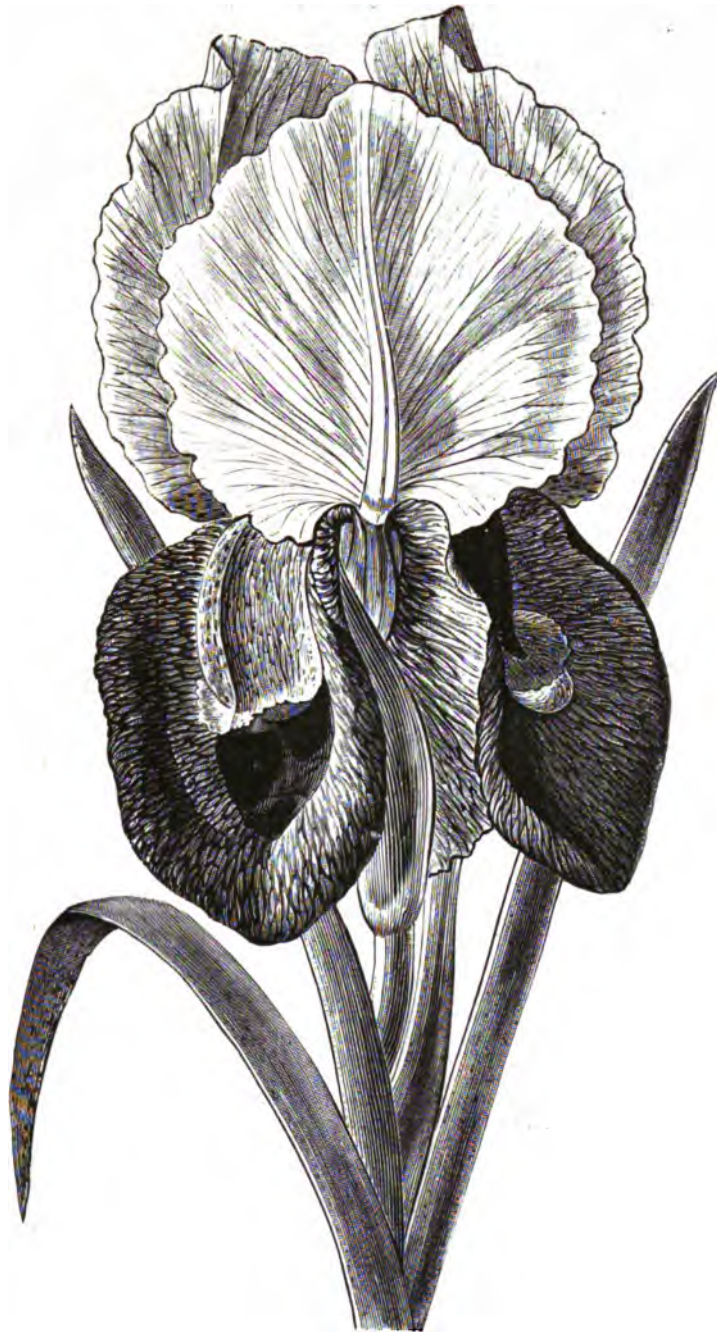


Fig. 48.—IRIS IBERICA.

this country towards the close of the sixteenth century from Persia, the specific name being derived from a city in that country. It thrives best in a warm moderately dry border, and produces its flowers about the same time as *I. iberica*. Some of the old writers state that if the standards of this species are

placed in water they produce a fine violet colour; and one adds, "But if a little Allome be put therin, and then wrung and pressed, and the juice of these leaves dried in the shadow, will give a colour almost as deep as indico, and may serve for shadowes in limming excellent well." The other species of

this section (*I. Saarii*, *I. paradoxa*, and *I. acutiloba*) are not in cultivation in this country, although they are by no means unattractive.—*L. CASTLE.*

ELECTRO-HORTICULTURE.

I WAS very pleased to read the remarks of Mr. Luckhurst at page 289 on this subject. Gardeners, and gardeners' employers, are always ready enough to adopt any introduction which will curtail expense and at the same time increase production, but I am afraid it will be a long time before the electric light is in general use in our gardens. I am further led to suppose this by thinking that if electro-horticulture possessed the advantages which some appear to indicate, it is reasonable to suppose it would have been in general use before this time, as I am given to understand that Dr. Siemens is not the first who has tried experiments of the kind with "startling" results. The other day the *Scotsman* newspaper published some very pertinent remarks on this subject. In a day or two afterwards the following letter was published from a correspondent, which speaks for itself.

"Edinburgh, April 13, 1880.

"Sir,—The article in to-day's *Scotsman* on Dr. C. W. Siemens' recent experiments in the above connection, reminds me of a question put and an assertion made by a certain royal preacher about 2800 years ago—to wit, 'Is there anything whereof it may be said, 'See, this is new?' It hath been already of old time, which was before us;' for I find in the 'Border Almanac' for 1878 the following quotation, headed 'A Loet Art,' from the *British (Kelso) Chronicle* of January 13, 1787:—'Last Christmas day, and frequently since, there was presented at table in Nenthorn House, Kelso, a large Asparagus, Pease, Kidney Beans, and Cauliflower, equally as good as in summer, all produced without the help of a hothouse, fire, or anything of the like nature. The gardener there lately produced a grown salad from the seed, in a close room, in the space of twenty-two minutes and a half, before a numerous company, by the power of electricity.'—HUGH CAMERON."

—*J. MUIR, Margam, S. Wales.*

TOO-MUCH-ALIKE ROSES.

I DO not think the following as mentioned on page 290 are the same—11, Alice Dureau and La Reine: the former is no doubt a seedling from the latter, but a much freer bloomer. 14, Madame C. Crapelet and Beauty of Waltham: the former is a stronger grower. 22, Marguerite de St. Amand and Duchess of Edinburgh (Bennett). Before he sent it out he kindly sent his foreman with it to me. I have not seen it since. 26, Black Prince and Pierre Notting. 27, Princess Mary of Cambridge and Marguerite de St. Amand.

As regards Roses here generally, few have died on the *Manetti* stock. They have broken well into leaf, but as yet are blarney. I have no doubt that standard Roses, which I do not keep, have suffered much. They do not die at the roots or at their heads. The Briars in severe winters suffer at the stems.—*W. F. RADCLIFFE, Okeford Fitzpaine.*

SHEFFIELD GARDENS AND GARDENERS.

MR. B. SIMONITE'S, ROUGH BANK.

No wandering horticulturist finding himself at Sheffield could consider his round of garden inspection complete without visiting the renowned cutler-florist, Mr. B. Simonite, nor by none will he meet with a more genuine welcome. A hearty shake of the hand, the index of a warm heart, and a firm cheery "Glad to see you," make the visitor at home at once. Many can remember with pleasure such greetings on the northern heights of Sheffield, and many too have experienced similarly enjoyable meetings this week at South Kensington, for at home or abroad this worthy worker in floriculture is always the same—frank and unostentatious—and enjoys the esteem of all his associates. He is respected alike for what he has done and what he is. He has encountered obstacles that few could have resisted so well, and has achieved that success that all admit is his just reward; great it is, but not too great for all the pains, labour, perseverance, and patience he has exercised during his plodding career. A friend who accompanied me to Rough Bank unwittingly paid this florist a high compliment when he said, "Ben is just what he seems," and what that is delineated in the excellent portrait of him on page 464 of the *Journal* of June 21st, 1877—namely, an honest intelligent man.

But now to the garden, or rather first of all to Rough Bank. Anyone essaying a visit to Mr. Simonite will find that the locality has "not its name for nought." Long and in some parts steep is the ascent, with roads not over smooth, and the buildings on the summit characteristic of the rugged hill. Old

are the tenements, and some of them quaint, and old too is the name of the florist who occupies one of them—old and honoured; for conspicuous on one of the ancient walls in clear large capitals, on a neat modern tablet, is "Simonite Lane," an official mark of recognition of the repute of an "old" family, for the Simonites have dwelt on Rough Bank for many generations, probably for centuries. Their dwelling, however, is not in this lane but is near it, but the garden is not near the dwelling. Let no one picture in his imagination this worthy florist laying down his tools for a few moments and running into the adjoining home plot to ventilate his frames or water his plants. Even if he could do this it would be a matter of surprise that he could have made himself famous by his skill as a cultivator, and the extraordinary success in raising so many new varieties that hold the highest rank in their genera. But he has no such advantages as a home garden. Half a mile or more has to be traversed before it is reached. The path is not a smooth carriage drive passing through an avenue; but, on the contrary, there is no shelter from the sweeping blast in winter nor shade from the sun in summer. The road, if it can be dignified by the name, is as rough in places as can well be imagined over a desolate track, through and past quarries and the "hills and holes" resulting from rough excavations where Nature has since done the levelling. Such is the approach to the cutler's garden.

This and one or two plots adjoining appear to constitute the only fertile spot on the otherwise barren eminence. Bounded by high, strong, and rough stone walls is the enclosure of less than half an acre. Outside it resembles a huge parish pound or pinfold: inside—well, has not Mr. Horner, "Ben's" warmly cherished friend, graphically described it on the page above quoted? To that inimitable word picture I refer those readers who are interested in the matter and want a "treat," and I simply pass by the heaps of soil, piles of pots, boxes, and other odds and ends which the casual observer might regard as lumber, but for which the florist finds an use. Unattractive in general aspect, as florists' gardens usually are except at certain seasons, yet this plain plot is the home of some of the choicest gems of earth. It contains something useful too, for no sensible man despises such crops as Cabbages, Celery, Scarlet Runners, &c., and these in small quantities are grown well, old potting soil keeping the ground fertile. Such crops are grown for home use and pleasure—the pleasure of giving a "boiling" to those who need it, but not sold, nor given for "showing." Still, with all his care to prevent unfair competition at the too numerous publichouse shows of garden produce in Sheffield, the generous cultivator is sometimes imposed on. An instance may be cited. A fine row of Scarlet Runners excited the cupidity of a sporting native; but knowing they could not be had for sporting purposes he had recourse to stratagem, none the less unworthy if it was successful. He applied for a "few Beans for a sick wife." "Certainly," was the reply of the grower, who was thrown quite off his guard, "go and help yourself." "He did help himself," said the trustful owner, "for he got them all, and next day he got the first prize with them at one of the sporting taverns, and he has also got orders never to show his face here again."

But to the plants. On my first visit in late summer the Tulips were resting; but there was a remnant of Carnations and Picotees, on the side stages of a home-made span-roofed house, with broad smooth petals of the true Simonite stamp, the former with clear bright flakes, the latter of spotless purity and sharply defined edges. Of the few still unfaded it was difficult to determine whether they had been "dressed" or not, for Mr. Simonite's style of dressing leaves the flowers as if they had "grown so." They do not remind one of over-starched dandies "got up for the occasion." It is the formal overdressing of flowers, giving them a stiff artificial appearance, to which so many object, and not to a neat natural arrangement of the petals and the removal of defects. Mr. Simonite dresses his own flowers because he likes to see them in their best form, and he is equally ready to dress those of others for the same reason; besides, in point of fairness he conceives that in the show tent all exhibitors should have their flowers staged in their fullest beauty. He therefore readily dresses if required the flowers of anyone with whom he is competing, even if by doing so he should contribute to his own defeat, for he would feel it no honour to be placed before a rival having better-grown specimens than his own, yet which lost because the grower was not able to do them justice and display them to the best advantage. Those are the views of the Sheffield florist. He is animated by true floral chivalry. With those who show

"for money" merely he has no sympathy, and he considers that "big prizes tempt people to do what is not right." Flowers in their best condition, and a friendly yet earnestly striving brotherhood of florists, constitute his ideal of exhibitions. But another word on dressing that is due to Mr. Simonite. While he has dressed hundreds of flowers for others he has never charged a farthing, nor taken one for doing so. He dresses for friendship, good will, and as an act of justice to the flowers, and these objects attained form his sole and sufficient reward.

The collection of Carnations and Picotees is altogether unique, for it is the owner's own creation, and the result of thirty years of labour and patience. Money liberally and wisely expended can effect much, but no amount of capital could have produced what this assiduous worker has achieved. His varieties, many of which are not in commerce, are the foremost in their classes, or, as Mr. Horner has said, "the best in every class are his." Some of them are well known—such, for instance, among others, as the crimson bizarre and purple flake Carnations John Simonite and James Douglas; red-edged Picotees William Summers and Violet Douglas; purple-edged Mary, Mrs. Summers, Mrs. Douglas, and Silvia; and Rose-edged Teresa. These alone are a splendid heritage, but are only a few out of a greater number—a foreshadowing of others yet to follow.

After the Carnations are removed from this structure, which is of good size, it is occupied with Chrysanthemums, which Mr. Simonite has lately "taken to." He finds that he can, with a little manurial aid, grow them in the soil formerly employed for Carnations. Last year was unfavourable for Chrysanthemums about Sheffield, yet the plants in the garden under notice were strong and promising when I saw them in September.

We next come to the Auriculas. A very plain structure with stone walls and a span roof accommodates this remarkable collection. The house is perhaps 50 feet long, or it may be more, with a path down the centre, and flat side stages on which the plants are placed. Every inch of space was occupied with plants, few of them being labelled, for whether in or out of bloom every variety is known to the owner. In the autumn they were extremely sturdy, with plump hearts, resembling miniature Cabbages; but several of them were "throwing up." There is no roof ventilation to the house, otherwise, as is apparent by the sooty covering on the glass, the plants could not be kept so clean as they are; and it is indeed a marvel how he can show them so fresh and with such purity of paste as he does. An annex to the house contained some thousands of seedlings in boxes, pots, and other receptacles; but it is grievous to relate that he lost the greater number of these, presumably by the sudden and severe frost of October. That frost, too, may have injured the plants generally, for they are not at the present time in their usual April condition, for many of the best flowers have come curled and crumpled, and several trusses which came up strong and promised to be very fine have only opened two or three flowers each, the rest remaining dormant, while some of the flowers have a duller appearance than they ought to have. Yet the display is very striking, and but for the late easterly winds the plants would have been in excellent form for the London shows. From these east winds he suffers exceptionally, as he is exposed to their full force, and in addition to their biting effects they bring upon him great clouds of smoke and dust from the extensive ironworks, &c., across the valley at Brightside and Attercliffe. Several times during the past week the glass was so thickly coated with soot that scarcely any light could pass through.

The most striking feature of Mr. Simonite's collection at first sight is the luxuriant and healthy foliage which the plants nearly all possess. Almost all the best flowers in each class are seedlings of his own, and robustness of habit seems to be a general characteristic of his strain. He appears to be particularly strong in white edges and selfs, the latter of which are very telling and make a fine display. His fine varieties, Frank Simonite, Talisman, and John Simonite, now well known to Auricula growers, are flowering finely. His purple self Mrs. Douglas is a superb flower, and would be a grand plant for the conservatory. Its main fault in the raiser's estimation is its excessive vigour and robust habit. It has unusually large leaves, and throws up a very strong flower spike to a foot or more in height. One seedling (Mrs. Dodwell) flowering for the first time is a grand one in the way of Frank Simonite, but superior to it or anything known in whites. He greatly regrets losing his batch of seedlings, as he expected many of them to have proved of exceptional merit. All will hope that he may be

more fortunate next season, as he has now such a grand strain of seedlings that if he is spared a few more years he will undoubtedly produce some splendid varieties.

He is not careful to keep the classes separate in hybridising, as he sees no gain by it. He says selfs will produce edged flowers, whites, greys, greens, &c., and *vice versa*, so also will they all. He is careful not to have an alpine on his place, and consequently he never sees one amongst his seedlings. He says their influence is so strong that if he had only one or two plants the majority of his seedlings would be alpinas. He has been using a little fire heat lately, as during the late cold winds he has been compelled to do, though he does not like using it if it can be avoided. A little artificial heat is necessary also to have the plants in flower in time for the London shows, which invariably are too early for him.

His mode of culture is to thoroughly shake out all his plants as soon as they have done blooming, shorten the tap roots to within about an inch of the collar and repot in fresh compost, after which he keeps them close in a frame for a week or two, and he says the vigorous growth they then make is surprising. He believes it is very bad treatment to repot in the autumn.

Mr. Simonite has during the winter had very severe losses amongst his Carnations and Picotees. He has never known so many to go off before. He says they made no roots last summer. His father still works among the flowers, and appears as hale, hearty, and enthusiastic as ever.

So great are the difficulties that this florist has to contend against, and so great withal is his success, that direct encouragement is afforded to others more favourably situated to follow his example, and to excel him if they can. If they succeed in doing this they will at the same time make a worthy friend, for he has much more regard for high-class flowers than care for his own fame.—J. WRIGHT.

MEALY BUG AND SCALE.

IN reply to J. Robinson on page 273, I must say the description of mealy bug as given by the Editors is quite correct, but think the insect of which he speaks is nothing more than the brown scale, as I have often found patches of what he states is like fine cotton wool protruding from them; in fact I have some at the present time on a very large Camellia in the conservatory, some of the leaves of which in the thickest part of the tree are black and of a sticky nature. I use soft soap dissolved in hot water, sponging the leaves and branches after picking off what I can see of the scale.

Happily I have never been troubled with scale on Vines, still I dress my Vines with Gishurst compound, soot, and sulphur every season, or a mixture of soft soap, clay, cow dung, soot, and sulphur. I have always managed to protect the plants from the ravages of scale and other insects; but if there are any plants in the viney infested with them they must be kept thoroughly clean, or they will in time find their way to the Vines, especially in the case of thrips.—F. H. FROUD.

CHICORY.

FOR supplying salad from November to April Chicory is the most useful plant with which I am acquainted. Lettuce or Endive cannot be compared with it. Many who have grown these crops during the last two autumns with the hopes of having a supply during the winter have failed to obtain a single plant fit for use at the time they are most needed. Good Lettuce or Endive at all times should be sweet, tender, and crisp; but how very seldom do we find winter Lettuce and Endive in such condition. More frequently do they appear unblanched, tough and flavourless. Few Lettuces will fold in to form heads during the winter, and when they are tied up like Endive they soon decay in frosty or wet cold weather. Lifting and storing them under cover does not always prevent that result, and very often the produce does not pay for one quarter the labour bestowed on them.

Chicory, on the other hand, is not subject to these disadvantages. It is extremely hardy, and will bear a reasonable amount of ill usage without suffering. It is very easily propagated from seed, which may be sown from the middle of April until the end of June. I sow it in ordinary garden soil in drills 2 inches deep and from 1 foot to 15 inches apart. The seed soon germinates, and as soon as the plants are from 2 to 3 inches high they are thinned out to 6 inches apart. After this the Dutch hoe is run amongst them every alternate week.

About the latter part of September and during October the

leaves assume a yellow hue and commence decaying. As soon as they are all decayed the small Parsnip-like roots may be lifted and started into growth to supply their delicate Lettuce-like leaves which are so valuable as a salad. Six to eight roots are placed in an 8-inch pot, any garden soil being employed, leaving only the crown above the soil. They are then watered and placed in the Mushroom house, on a flue, in a warm cellar, or anywhere in the dark, and in a temperature of 40° or 50°. The crowns soon start into growth and throw up long cream-coloured leaves, which are as tender and well-flavoured as anyone could wish the best Lettuce to be. One or two dozen pots full will give a supply daily for some months, and the plants never show the slightest sign of decaying or seeding.

Anyone with a piece of ground to grow Chicory in during summer, and a cellar to keep the plants in throughout the winter, may have fresh salad all the year round, as the green leaves may also be used in this way during summer. The roots are not worth much after they have been lifted once, but those which may have been left in the ground are as good for lifting the second winter as the first. This, however, is of little importance, as the plants are so easily raised from seed and grow so fast that anyone may raise a number of them annually without much expense or trouble.—J. MUIR, *Margam*.

NOTES ON VILLA AND SUBURBAN GARDENING.

KITCHEN GARDEN.

Strawberries.—A firm and rather rich soil is best suited to this crop, but the surface of the beds should be loosened with the hoe to destroy the weeds and prevent cracking. It was not at the roots that the crop was injured by the continued rainy weather during last season, the failure resulted from the insufficiency of sunshine to mature the unusually heavy crops. Where, therefore, the soil is light and the rainfall small the first favourable opportunity should be taken during showery weather of mulching the beds with short stable manure. Failing this manure the grass from the mowing machine may be substituted, first giving a light dressing of some kind of artificial manure, such as guano, or Clay's or Amies' fertilisers. A mixture of lime, soot, and salt spread lightly will both destroy insect pests and also materially benefit the crop. Plants placed out this spring should have all the bunches of bloom pinched out as they appear, and the same remark applies to those planted last autumn should they be very weak. Thus treated they will make splendid plants for the following season, which will well repay for the judicious self-denial; but if fruited they in all probability will make but poor progress. The spaces between the lines of unfruited plants may without injury to them be cropped with either Spinach, Onions or Lettuces.

Kidney Beans.—A sowing of Osborn's Forcing or other early varieties should now be made either on a warm border or under the shelter of a hedge or wall. A light and rather rich soil suits them well; they may be sown in drills about 15 inches apart, and the plants eventually thinned to about 9 inches apart in the rows. A sowing made in a rough frame on a slight hotbed, and protected either with lights previously used for bedding plants, or with mats, will produce a very profitable crop some time before those sown in the open are fit for use. Half the beds may be sown with Osborn's, and to follow these either Canadian Wonder or Carter's White Advancer. The latter is a heavy cropper, and the pods are of a good length.

Potatoes.—The planting of these ought now to have been completed. Some of the earliest, and even the second early varieties, are now pushing through the surface, and in order to protect these from probable frosts the plants should be kept covered with earth. When the haulm is too high or too much developed for this, protect, whenever frost appears imminent, with either inverted pots, fern, litter, or branches of evergreens. A late and light crop is the consequence of injury to the growth by frost. The soil about those plants in frames should not be allowed to become dust dry, and an excess of moisture affects the quality of the crop. Supply water previously to closing the frame in the afternoon, employing a rose pot and tepid water, or, during showery weather, if the days be warm, the lights may be drawn off for a time. Give abundance of air during the early part of the day. The crop, when of good size and fit for use, may be lifted and stored in moist soil in boxes, and the frames used for Kidney Beans, or lifted off and placed on a fresh hotbed for Cucumbers and Melons.

Salading.—Frequent small sowings should be made if an unbroken and even supply is expected. Lettuce during the summer months succeeds best when sown where the plants are to remain. Make small fortnightly sowings in lines about 1 foot apart, sowing thinly, thinning out the seedlings where crowded, and finally to about 10 inches apart in the rows, making up blanks at the same time by transplanting with a trowel. Badish seed may be sown between the lines of Lettuce. Of the latter the Paris White Cos is good for the present sowing, and of the Badish the French Breakfast or Wood's Frame.

GREENHOUSES AND FRAMES.

Ferns.—In many cool and partially heated structures and in windows, Ferns of all descriptions that were safely wintered are now commencing active growth. The present is a good time to repot any that require it, and others may have much of the old soil picked away with a pointed stick to such an extent as to admit of their being easily repotted into pots of the same size, and where the plants are unhealthy into smaller pots. The stock of *Adiantums* at the present time may be increased by dividing the old plants, not by chopping them through with a sharp instrument, but by the insertion of a plunging fork or a pointed strong stick into the soil and dragging it apart as required. Trim the divisions into shape, and place them in small pots, shifting as the plants grow and root freely. *Adiantum formosum* is sometimes grown by amateurs, but seldom to perfection. The rhizomatous stems are formed far below the surface, and when turned out of their pots many will be found at the outside of the soil, and as they are very brittle the reduction of the ball must not be attempted. Either divide and repot, or carefully shift into larger pots. They, however, do not require repotting every season, especially if weak liquid manure is occasionally given them. *Pteris tremula* and *Pteris serrulata* are two very popular and easily grown greenhouse Ferns, especially the latter. In most houses where they are grown, unless kept exceptionally dry, both freely reproduce themselves from spores, numbers springing up from the undisturbed soil in pots, back walls, and other moist places, and a few of them should annually be placed in small pots and gradually grown on. The balls of the old plants may be slightly reduced when repotting. *Asplenium bulbiferum* and *Asplenium viviparum* grow freely in a greenhouse or conservatory, and are ornamental at all times. The balls of these, too, may safely be reduced when repotting in the spring.

A peaty soil is usually recommended for all the above Ferns, but more fibrous loam may with advantage be used. A good compost consists of two parts of turfy loam, and of peat and leaf soil one part of each, with a good addition of sand. The pots employed should be quite clean and well drained, and the soil made rather firm after being well worked in among the roots.

***Lycopodium denticulatum* (*Selaginella Kraussiana*).**—This is employed in a variety of ways, both in pots and in borders of conservatories. It requires to be replanted annually, or it will probably damp off in places. It thrives in almost any kind of soil, but that recommended for Ferns is the best suited for it. The pots should be one-third full at the least of crocks, and dibble in the single pieces of growth thinly. Shade both Ferns and *Selaginellas* from bright sunshine.

WORK FOR THE WEEK.

HARDY FRUIT GARDEN.

THE blossoms of Apricots have set well although not very abundantly, and the trees are making plenty of growth. The breast-wood should be removed, reserving all the side shoots required and available for laying in, but avoid overcrowding, and stop some at the second or third leaf with a view to convert them into spurs. Any weakly, unfruitful, attenuated spurs or shoots may be cut out, so that growths of the current year may be trained in their places. Where the protection employed is of a fixed character a portion of the same should now be removed, in order to admit more air and light to the foliage, but where canvas is used it should be removed daily—early in the morning unless frost prevails, and let down late at night according to the state of the weather. Peaches and Nectarines though bearing few blossoms are growing strongly, and disbudding will require attention. Shoots of last year trained-in as bearing wood should, if fruitful, have a shoot retained at the base for next season's bearing, and one above the fruit to draw the sap to it, the upper shoot being stopped at the second or third joint. If unfruitful cut them back to the lowest shoot at the base of each. The extensions require to have the foreright shoots rubbed off, and growths should be left on the upper side at about 15 inches distance apart, commencing from the base of last year's growth, rubbing off the intermediate growths and all those on the under side of the branches, though they may be stopped at about an inch of growth, and there will form spurs which rarely fail to ripen well and set the fruit freely. Protection should be afforded the trees, as their foliage is quite as tender as the blossom and young fruit. The leaf-rolling caterpillar will soon probably make its appearance on the foliage of Apricot trees, and should be carefully picked off or crushed between the finger and thumb. Aphides on Peach, Cherry, and Plum trees may be destroyed by syringing with tobacco water or dusting with tobacco powder. If mildew appear on Peach or Nectarine trees apply flowers of sulphur. Cherries, Pear, and Plum trees on walls when in bloom should have a slight protection of some kind in readiness against unfavourable weather. Watch for the Gooseberry caterpillar, and syringe the trees upon its first appearance with a solution of nicotine soap, 4 ozs. to the gallon of water, or dust with hellebore powder. Employ the Dutch hoe freely among plantations of Gooseberries, Currants, Raspberries, and Strawberries, to keep down weeds and loosen the

surface of the soil. Mulch plantations of Strawberries with half-decayed manure, as the Strawberry is impatient of drought.

FRUIT HOUSES.

Vines.—Late varieties of Grapes must be encouraged to make rapid growth, syringing freely twice daily, and keep the evaporation troughs filled with liquid manure, closing the house early in the afternoon of bright days. Afford Muscats in flower a free circulation of rather dry air and a temperature of 80° to 85° or 90° by day, falling to 70° or 65° at night, raising the points of the bunches to the light, and liberate the pollen at midday by gently rapping the footstalk of the bunches. If there is a deficiency of pollen take it from Hamburgs and apply to the Muscats with a camel's-hair brush. Vines generally have lately made rapid progress, and rendered additional labour necessary to keep pace with thinning, pinching, tying, and regulating the growths. Where there is a large quantity of Grapes to be thinned commence as soon as they are out of bloom with the free-setting varieties, such as Hamburgs, and follow it up early and late and on dull days when the temperature is cool, alike for the comfort of the operator as well as a safeguard against rust. Do not allow laterals to become so long as to necessitate their removal in a large quantity, which gives a severe check to the Vines; but take off or pinch out the points regularly. Encourage as much growth as can be fully exposed to light and air. Surplus bunches should be removed boldly, as overcropping proves fatal to perfection in colour and finish. Crops swelling off must have a liberal supply of heat and moisture, and the borders inside should be well supplied with water. Those Vines bearing fruit that is commencing colouring will be greatly benefited if the inside borders are watered thoroughly with liquid manure and mulched with 2 or 8-inch thickness of short manure. Air should be freely admitted in favourable weather, the ventilators being slightly open constantly to aid in improving the colour and bloom. When the colouring is completed in the early house fire heat may be gradually lessened, keeping the temperature at about 60°, and allow on all favourable opportunities a free circulation of air.

Melons.—The fruits of the earliest plants will be growing large, and must have the supports lowered. Frequently stop the laterals, or thin them out where they are crowded. Supply water liberally to plants on which the fruit is swelling, and weakly specimens may receive a moderate quantity of liquid manure. Those plants not in flower should be watered optionally in hot weather, whilst those coming into flower require a somewhat drier condition both at the roots and in the atmosphere. Attend regularly to the setting of the blossoms, avoiding using the knife; stop the shoots, however, one joint beyond the blossom when impregnated, but after the fruit is set remove all superfluous growths. Avoid giving stimulants to plants until the fruit is fairly swelling, when liquid manure may be afforded liberally, especially to plants carrying heavy crops, until they are well advanced towards ripening. Maintain a night temperature of 70°, 70° to 75° by day, and 85° or 90° with sun heat. Ventilate freely in favourable weather, closing early with plenty of sun heat, when the plants may be syringed lightly, except such as are in flower. Watch for canker at the collar, and rub it out with fresh slaked lime when it makes its appearance.

Cucumbers.—These have made great progress lately, and require attention in tying out the growth, stopping one or two joints beyond the fruit, removing bad leaves and exhausted shoots, so as to maintain a succession of healthy fruitful growths. Water plants in houses abundantly, and with weak liquid manure about twice a week, syringing the foliage and walls daily about 3.30 P.M., when the house can be closed. Shade only to prevent flagging; those plants in frames and pits will hardly need shading as yet, but they must not be allowed to flag. Use tepid water through a rose watering pot at about 3 P.M., closing the lights at the same time, but as the nights are yet cold be careful that the foliage becomes dry before night. Husband the sun heat by early closing, employing a good thick night covering. Maintain a good bottom heat by linings, renewing them as necessary. Pot off ridge varieties, keeping these and other young plants near to the glass. The same temperature as advised for Melons will be suitable.

Orchard House.—The spring though seasonable so far has been backward, and the prospect in this house contrasts very favourably with fruit trees out of doors. Apricots, which are fairly set and very abundant, should be at once slightly thinned. Strong or superfluous shoots should be rubbed off or pinched back, so as to secure the symmetrical development of the trees. A strict watch must also be kept for caterpillars, which should be destroyed either by carefully unfolding the leaves or gently squeezing them between the finger and thumb. The trees will require abundant supplies of water, affording them weak liquid manure about once a week. The fruit of the Peach and Nectarine, though less forward than the Apricot, will in most instances be set, and as the trees at this stage are seldom free from aphides fumigation should be resorted to during calm evenings when the trees are perfectly dry. In the case of the infection being confined to a few parts of a tree they may be dusted with tobacco powder, or syringed with quassia water, which is composed of 1 lb. of quassia chips boiled in 4 gallons of water for twenty minutes, and whilst cooling mix

with it 8 ozs. of soft soap. It may also be applied with a brush, or the infested shoots may be dipped. The syringe or garden engine will be required every morning when the day promises to be fine, which will assist in the casting of the remnants of the faded blossoms and in keeping down insect pests. Mildew is sometimes troublesome, against which apply flowers of sulphur. Cherry trees require abundance of air to set their fruit freely, and are very liable to be attacked by black aphides, which may be destroyed by tobacco powder or the quassia water above named. Fig trees in pots will now be growing, and must receive liberal supplies of water, as any deficiency of this element will in all probability cause the fruit to be cast. Ventilation needs careful attention, opening the ventilators at from seven to eight o'clock according to the weather, keeping them closed or nearly so during the prevalence of cold easterly winds. Close the ventilators at from five to six P.M., but whenever frost or a low night temperature is apprehended close somewhat earlier, as there is no danger of a high sun temperature acting injuriously during the latter part of the afternoon.

PLANT HOUSES.

Greenhouse.—Azaleas in time become large and straggling, having a thin open appearance, in which case they may be cut back; but it must not be carried too far, nor must it be attempted unless the roots are in good condition. The plants should then be placed in a warm close atmosphere and syringed twice daily, keeping the soil rather dry until the shoots are about an inch long. Plants that have flowered should at once have all seed pods picked off, and if there is any trace of thrips promptly apply an insecticide, as there is danger of injuring the tender foliage if an attempt be made to destroy them by fumigation whilst the growth is young. Those plants on which the flowers have not yet opened may be syringed whilst the sun is shining on the house in the afternoon, closing the ventilators at the same time. Plants in flower should be shaded from the sun, as the high-coloured varieties become duller when exposed to its rays. Double Primulas last much longer in bloom than the single varieties. Plants that have flowered may be increased by division or cuttings, the latter being inserted singly in small pots in gentle heat. Camellias that have been placed in heat should not be retained there after the growth is completed, a somewhat drier atmosphere with more air and light being necessary until the buds are set, when the plants should be moved to cooler quarters. Oranges of all kinds whilst making their growth must be well supplied with water, especially overhead, and must be slightly shaded from bright sun. Any that are in an unsatisfactory condition should be turned out of the pots or tubs, reducing the balls considerably, and placing them in smaller pots, &c. Introduce the plants to a house with a temperature of 50° to 65° at night and 70° to 75° by day, having a rather close moist atmosphere, and if there be convenience for affording a bottom heat of 75° to 80° it will be an advantage. The Otaheite Orange, so useful for winter flowering, should when out of bloom have its growth encouraged in a gentle warmth.

Epacris that have flowered in succession will have had the longest sprays removed for decorative purposes, and as the plants are most useful in a small state they may be further cut back to within 2 or 3 inches of where they were cut back last year. They will break away and complete the growth in an ordinary greenhouse, or it may be accelerated by closing the house or pit early in the afternoon, at the same time syringing the plants freely. Acacias, Genistas, and Cytisuses that have flowered through the spring should also be cut back, but not so closely as Epacris, and if afforded a little heat and moisture they will break more freely. Coprosma Baueriana variegata is a very useful plant for decorative purposes, its shining variegated foliage being very effective in autumn and winter, but old plants become bare of leaves at the base. Such should now be cut back and placed in gentle heat and a moist atmosphere until growth commences, when the plants may be shook out, potted, and continued in heat until growing freely, when they must be gradually inured to more air prior to removal to cooler quarters. The young stock of Heaths that were potted in March or earlier will by this time have taken to the new soil and be growing fast. Plants wanted to attain a good size in as short a time as possible will be benefited by having the flowers picked off. Abundance of air should now be given to Heaths, and where a house or pit is not devoted to them they should be placed at one end of the house where they can be given more air than is necessary for the other occupants. Chrysanthemums should receive every attention, potting them into larger pots as necessary, and keeping them clear of aphides. Lilies of the Valley after flowering will, if they have copious supplies of water and a light position afforded them until the growth is complete, be available for early forcing another season. Plants of *Deutzia gracilis* forced through the winter will be growing and should have the old wood cut out. Weak manure water supplied twice a week during the growth of the plants will enable them to make good growth in comparatively small pots. Plants cut back should be encouraged with gentle heat. Hardy shrubs such as Azaleas and Rhododendrons for conservatory decoration should for a few weeks be placed in a cool house, in order to allow them to harden a little before being placed outdoors. The con-

servatory will now be as gay as at any time in the year. Seek to prevent monotony as much as possible by varying the arrangement so as to make the display as attractive as possible, and remove any plants not of a permanent character as soon as the flowers commence fading, keeping all as neat as possible.

TRADE CATALOGUES RECEIVED.

John Laing & Co., Forest Hill, London, S.E.—*List of Tuberous Begonias.*

E. H. Krelage & Zoon, Haarlem.—*List of Hyacinths.*

TO CORRESPONDENTS.

THE "WILD FLOWERS OF GREAT BRITAIN" (E. C. Riddings).—All the back numbers of this work can be had at any time, price 1s. each.

NICOTINE SOAP (J. P. Amstour, and Others).—As you will see by an advertisement in another column, it can be had from the manufacturers at Shad Thames, London Bridge, and from several seedsmen.

ROYAL HORTICULTURAL SOCIETY (H. J.).—You can obtain all the information you require by writing to Mr. Barron, Royal Horticultural Society's Gardens, South Kensington, London.

FIR-TREE OIL (A. E. F. C.).—You will find it advertised in last week's Journal. Messrs. Hooper & Sons, Covent Garden, are the London agents, but it can be had from most nurserymen and seed merchants.

BUCHARIS AMAZONICA (E. B.).—It is a stove plant, and will not grow and flower well in an ordinary greenhouse. It requires a moist atmosphere, and a night temperature of not less than 60°.

INSECTS ON BUCHARIS AMAZONICA (R. H.).—Without seeing the insect we are unable to tell you its name, but washing or syringing the plants with a solution of soft soap will probably destroy the pests and will not injure the foliage or bulbs.

POLYANTHUSES INJURED (G. T.).—They are probably being eaten by sparrows. Stringing black worsted rather closely an inch above the tops of the plants often has the effect of banishing the birds. Your other question shall be answered next week.

STRAWBERRIES NOT SETTING (T. H.).—Keep the plants well supplied with water at the roots, and ventilate freely, so that the pollen becomes dry. Drawing the hand gently along the trusses at midday disperses the pollen, or you may employ a camel-hair brush as you suggest. Outdoors the pollen is dried by the sun and wind.

SEMI-DOUBLE PRIMULAS (J. S.).—Although the flowers are much withered by having been packed in dry wadding, we can perceive that when fresh they were very good, and the strain should not be lost. The colours are distinct and pleasing, and the fringed petals are very marked, more so than a usual with semi-double varieties.

TEA ROSES (Jams Udale).—The blooms sent are very fine, *Maréchal Niel* and *Niphetos* exceptionally so. *Comtesse d'Artois* is remarkably rich in colour, deep salmon rose, and very beautiful. The *Maréchal Niel* sport is good, but similar to others that have been sent to us, and does not possess the deep rose tint of the flowers submitted by "A. P." nor such a powerful perfume. We congratulate you on growing such fine flowers.

CUCUMBERS NOT THRIVING (T. C.).—There is not any fungus on the leaves or stem of the sprays sent us. The plants are suffering from a check of some kind, probably a low moist temperature during a period of dull weather, and at night, the foliage being scorched upon a return to bright days. This may be obviated by shading for a few hours in the hottest part of the day, which will check evaporation, the ventilation being moderate. Cut away all the parts affected, and encourage fresh growth by a brisk heat and moist atmosphere by day.

NITRATE OF SODA FOR STRAWBERRIES (Old Subscriber).—A sprinkling, not on the foliage but on the soil between the rows, of about half a pound to six square yards, applied during or just before a shower, would be beneficial in stimulating the growth of the plants. If you mix any other fertiliser with it choose superphosphate of lime in the proportion of two-thirds to one-third of the nitrate of soda, but the latter is the quickest in its action.

INSECTS ON PEACH TREES (W.).—As the trees are only slightly infested you cannot do better than fumigate the house for two or three nights consecutively, and afterwards syringe the trees freely night and morning. With the free and judicious use of the syringe you ought to be able to keep the trees clean. But do not be deceived as to the condition of the border. By frequent syringings the surface is often moist when the soil below is dry, the growth of the trees is then checked and insects increase rapidly.

CROPPING VINES (A New Subscriber).—It is impossible for us to say how many bunches should be left on the Vines, as that can only be determined by their size and probable weight. If each Vine having two canes ripens 7 lbs. of Grapes, or at the most 4 lbs. to each foot, that will be quite sufficient during the present year, and this is assuming the Vines are in a healthy vigorous state. If they are only moderately strong, 2½ to 3 lbs. per rod will be ample.

SOIL FOR MELONS (Idem).—Melons enjoy strong loam, which is much better than pure clay. If the loam is light, clay may be mixed with it with advantage. It is well to start the plants in generous soil, and when they are growing freely add more of a stronger nature and make it firm.

HYACINTHS AFTER FLOWERING (B. B.).—Cut off the flower spikes, and promote the growth of healthy foliage by watering the plants regularly as if they were in bloom until signs of change are apparent, when water must be gradually withheld. The plants may be placed in a frame or other light position for a week or two and then be placed out of doors. Large spikes will not be produced next year from the same bulbs, but if several are placed in a pot they will produce a pretty effect, and will afford flowers valuable for cutting for vase decoration.

SCALES ON VINES (W. H.).—Your Vines are attacked with the scale insect, *Coccus Vitis*; pursuing the course you have adopted of dressing the rods with a strong solution of Gishurst compound in which a little paraffin is mixed, you may succeed in destroying the pest. You had better apply the solution with a brush, brushing the stems rather briskly. Do not use too

much paraffin, a fluid ounce to a gallon of Gishurst will be ample. You must continue the dressing at intervals during the summer, and in winter the Vines and house must have a thorough cleansing.

PELAGONIUM LEAVES SPOTTED (E. H. A.).—This disease is not the result of insect attacks, and we can only suggest, as in the case of a former correspondent, that the plants have probably been too moist at the roots at some period of their growth, or the cuttings may have been taken from unhealthy plants. With healthy root-action and a warm but not too moist atmosphere the plants will probably improve; but any that are seriously affected we should cut down, and healthy growth may issue. We never propagate from plants affected with the spot to the same extent as yours appear to be. Plants will often grow out of the disease when they are planted out in summer: if they do not do so they should be thrown away.

ANTS IN VINERY (W. A. B.).—By forming nests in the soil and in flower pots they become injurious. We have known them to eat the stems of Peach flowers, and to quite spoil the buds of Roses under glass, but have not known them to injure Vines. By pursuing your present mode of attacking them you will check their undue increase; guano and paraffin sprinkled where they abound will partially effect their banishment. We have not known worms injurious to Vine borders, but their presence in great numbers is indicative of a too rich and wet soil. The safest mode of extirpating them is to water the soil of either borders or pots with clear lime water, when the worms will come to the surface and can be secured.

GRAPES NOT SETTING (C. T. F.).—You do not state at what temperature the house has been kept. The condition of the bunches sent suggests that it has been much too low, and the atmosphere also too moist when the Vines were flowering, consequently the pollen was not dispersed and the flowers were not fertilised. Black Hamburgs will set freely under conditions where Muscats are, as in this case a total failure, for if all the bunches are like those before us the crop is ruined. Had these two bunches been left on the Vines only one berry would have swelled to maturity. The night temperature for Muscats during the flowering period should be 65°, with a rather dry atmosphere. Had the instructions on Vine management which have from time to time been given in our "Work for the Week" columns been carefully carried out you would not have had to deplore your present failure.

DRESSING PEAS WITH PARAFFIN—TRAPPING MICE (Ingleday).—It is not necessary to "soak" the Peas in paraffin for any length of time to render them distasteful to mice. As Peas were not as a rule well matured last season soaking them for several hours at this early period of the year, even in pure water, might probably be injurious to their germination; if you just moisten them that will be sufficient, and even then if the Peas are not hard and sound you may do as much harm as good. Try a portion of them, dusting another portion with red lead, and note the results. We find that a covering of sharp ashes spread half an inch thick over the rows preserves the Peas from the attacks of mice, but the most effectual plan is to trap the vermin. We recently saw some 9-inch flower pots sunk to the level of the rims between the Pea rows, the pots containing water of the depth of about 3 inches, and a bait to allure the mice, all of which were caught in a week, for on getting into the water they were unable to get out again.

WORMS IN SEED BEDS (Idem).—If you place a lump of fresh lime as large as your hand in a pailful of water, and when the water is perfectly clear apply it to the beds through the rose of a watering pot, the worms will come to the surface and can be caught.

GRAPES RUSTING (R. S.).—Since replying to your question last week we have received a letter from your gardener, who gives information that your letter did not contain both as to the treatment the Vines have received and the temperature to which they have been subjected. It is highly important when information is sought that all the data possible be afforded to enable us to give an useful reply. Strong rank manure placed in the house is quite sufficient to cause the evil referred to, and it appears that since it was removed the Vines have improved. Your gardener is adopting a wise course by encouraging the production of surface roots, and if wood ashes and bone dust are added to the surface dressing they will act beneficially—any quantity of the former and a quarter of a peck of the latter to a large barrowful of soil. As the Vines increase in growth the border may be mulched with sweet manure to prevent the surface drying excessively during hot weather. The temperatures are right, and your gardener appears to be pursuing a proper mode of ventilation. With an abundance of healthy surface roots and clean and not overcrowded foliage your Vines will regain their health and produce good crops of Grapes.

NAMES OF PLANTS (H. Alton).—1, Insufficient for identification; 2, *Adiantum pedatum*; 3, *Aspidium angulare*; 4, *Platyloma rotundifolia*. (A Subscriber).—*Loposia lineata*. (J. R. Boyd).—*Rhynchospermum jasmoides*. (J. P. T.).—The spray resembles *Erysia terminalis*, but is too withered and insufficient for identification. (Reader).—The flower is *Deutsia gracilis*, the leaf *Aucuba japonica*. The down on the Vine shoots is quite natural. (W. H. M.).—*Cornus mascula*. (L. R.).—*Pteris umbrosa*. (A. Long).—1, *Cattleya Forbesii*; 2, *Lycaste aromatica*.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

THE MANAGEMENT OF WOODLANDS.

We have for many years had the management of woodlands, and have also been close observers of the methods of treatment pursued in different parts of the kingdom, where the profit is expected to accrue chiefly from the growth of timber, from underwood only, and from plantations of firs and pines. The subject now before us is one which has been much neglected, as being considered of less consequence than more exciting subjects, such as steam cultivation of arable land and the management of pasture and park lands. These generally first catch the eye of the proprietor, and at the same time are objects of the daily calling of the home farmer. It is nevertheless a fact that

well-managed woodlands and plantations will yield as much rental per acre as the same description of land under cultivation, but there are certain details connected with the growth of timber which will pay as well for intelligent attention as the arable and pasture land.

In order to bring before the notice of the home farmer the different methods of obtaining profit from woodlands and plantations under varying circumstances, we cannot perhaps do better than illustrate our subject by taking for consideration prices of woodland, &c., which have come under our notice, and give the actual state and condition of them, including both the nature of the soil, the crop of timber or underwood, or of both, as the case may be. We shall also have to refer to what are called hedgerows, &c., for these are often found as divisions between arable land or meadows. We shall, however, find it necessary in considering our subject to inquire into the propriety of retaining some of the woodlands in their present state, or whether they may not be converted into arable or pasture land with advantage, not only on account of the soil, but its situation also. We often find pieces of woodland of much value, but in consequence of their irregular boundaries and other circumstances it would be a benefit to the estate in various ways to convert them either to arable or pasture land. Our first illustration is a piece of woodland in a southern county, extending over about 20 acres, the soil being a strong loam resting on a chalk subsoil. There is no timber upon it, but it is well stocked with ash, hazel, and other sorts of underwood usually found upon such a soil; the greater portion of the growth is used for hop poles and hurdle making. It may be thought that this land would have yielded more profit if partly stocked with timber trees, especially oaks, as the soil is strong. But it is not so, for the produce at present is usually cut at twelve years' growth, and is sold on the average of cuttings for about £16 per acre. The adjoining land is arable, worth about 25s. per acre, and subject to a tithe rent charge, from which the woodland is free. This shows that but little if any advantage could be derived from bringing the woodland into cultivation, either for arable or for pasture purposes, except it possessed irregular boundaries, which is not the case in this instance, for on one side of the wood is a turnpike road, and on the other a well-shaped arable field. The wood, too, is not without its advantage to the adjoining arable land, being situated on the north side of it, and therefore does not shade the crops, but shelters them.

Our next illustration is a precipitous piece of woodland of about 85 acres in a western county, on the stone formation, with very little timber, but a good plant of underwood, consisting chiefly of oak stems, which grow very quickly in that moist climate. It is usually cut at eighteen years' growth at the time of cutting, which is done during the winter months, the largest stems being deferred, however, until the end of April or early part of May. This wood being composed of oaks is commonly stripped for the sake of the bark, which meets a ready sale in the neighbourhood. In this wood the land is so steep that the men employed in cutting can scarcely keep their footing. This wood after being barked is used for making hurdles, or hurdle gates as they are sometimes called, and for other purposes, and thus yields a return which could not be surpassed by any other known means, as the land is too hilly and too near the stone for cultivating as pasture.

The third illustration is a level piece of woodland in a southern county, and situated a long distance from chalk or marl. It contains about 16 acres, is surrounded on all sides by arable land, the value of which to rent is about 20s. per acre. The woodland is of the same description of soil, which is rather strong but gravelly, and does not require draining. There is about 160 oak trees per acre, but only those grown direct from the acorn make any perceptible and profitable increase in measurement. These trees do not increase in value annually more than 1½ per cent. The underwood is very rough and bushy, and not worth at ten years' growth more than 40s. per acre. After making a fair calculation we can show the propriety and profit of taking the crop of timber and

converting the land into arable. After charging the cost of grubbing and chalking we find, after taking credit for the value of timber and making all fair charges on either side of the account, an annual advantage of 21s. 6d. per acre.

In continuing our illustrations No. 4 is a piece of woodland of about 11 acres on the same description of soil and in the same district as No. 8. The timber is for the most part oak, with about one hundred trees upon the acre, and reach 6 feet meetings. The underwood was of the same inferior description and value as No. 8, say 4s. per acre per annum. This coppice of timber on the whole is certainly better than that in No. 8, and would increase in value, whilst the underwood was retained, about 2 per cent. per annum. This wood we introduce to notice for the purpose of showing the advantage or otherwise of a plan which obtains in some parts of England—viz., stubbing or grubbing the underwood, with the view of obtaining pasture. In this coppice, however, the grubbing between the timber which is left has cost £6 per acre. The grass of this land is of little use for any stock except dairy cows, and is of the poorest description, as may be imagined in consequence of the shading of a full head of timber, and not worth more than 7s. per acre rent. Since the stubbing of the underwood we estimate, instead of the timber paying 2 per cent. in its growth, it is so much injured by letting in the wind that it will not now increase at the rate of more than 1½ per cent. It will therefore be readily seen that this coppice has not been judiciously treated. Had it, however, been brought into cultivation it would have paid as well as No. 8, and being surrounded by arable land would have greatly improved the adjoining fields, especially as the boundaries are of an irregular and zigzag description.

The next illustration on our list is a piece of woodland of about 24 acres, situated in a southern county, and favourable climate for the culture of both cereal and root crops. The land is quite level, consisting of a fine hazel loam resting on a marly brick earth; in fact, this land is never too wet and never too dry for agricultural purposes, and is surrounded entirely by arable fields of similar soil, and is worth to rent at least 80s. per acre. There are about eighty trees to the acre, which we estimate at from 9 to 10 feet meetings, all of which are oak. The underwood is probably worth about £4 per acre at ten years' growth. These trees being so nearly of the same size that they must have been nearly all planted together, and in our judgment they should stand or fall together. We, however, estimate that they do not increase in annual value more than 8 per cent. This land under cultivation would be worth upwards of 40s. per acre, being tithe free, nor must we lose sight in this case of the immense benefit to the adjoining land by the removal of this wood. Now, in making our calculations in the same way as we did in the conversion of No. 8, the actual advantage to be derived by converting this land into arable we reckon it would increase in annual value about 82s. 8d. per acre. In travelling through the country we find in various counties large tracts of woodland, much of which certainly ought not, so far as profit is concerned, to be allowed to remain in such a wasteful condition. We cannot, however, of course say that every piece of woodland ought to be brought into cultivation, because we know that some soils are not suitable, and upon many of the estates owned by noblemen and gentlemen a portion of these woodlands are almost a necessity for the rearing and preservation of game. Besides, we believe that game may be made not only to contribute to the amusement of gentlemen, but by the dint of judicious management may also be made to yield a profit equal to that of arable or pasture land.

(To be continued.)

WORK ON THE HOME FARM.

Horse Labour.—We are still enjoying the advantage of seasonable weather. The horses will have lost but little time in consequence of the late showery weather, for when they cannot be employed in tillage on the fallows intended for roots, rolling the clovers, the pastures, and parkland may be done with advantage. Where the Lent corn has not been sown with clovers or saintfoin it should now be done at the first opportunity, for as soon as the ring roller can be used the seeds should be sown immediately after and harrowed in by the chain harrow. We do not approve of sowing clover with barley, but prefer sowing on the drege oats or wheat, especially the early white Canadian oats, for these come so early to the harvest that in ordinary seasons a good crop may be cut in the autumn. In the same way when wheat is sown after potatoes and seeded with clover in the spring a capital cutting may be obtained until the first frosts commence. We recollect having done this for five years in succession with great advantage, although some farmers say that it is likely to injure the clover crop in the following year; however, we never found that it did so in our practice. We must say to the home farmer that in consequence of the uncertainty of obtaining a regular plant of clover it is a good plan to sow with it some giant saintfoin; but seed from abroad should be obtained, as it is far preferable to that grown in England and is more likely to give a second crop, and this second cutting is important in admixture with clover. We not only find that the saintfoin fills up the deficiencies in the clover plant with advantage, but when clover is grown without rye grass with it

the collection answers a good purpose in holding the crop off the ground. It also keeps it *alive* in the earth as hay harvest, so that the hay can be made and stacked at least two days earlier than when *cover* is grown alone, and this in our sickle climate is often of great consequence. Horses will now be engaged in preparing the land for mangolds, for in case the land can be got into good time the last week in April is certainly the best time for sowing the seeds. It is a common practice now to drill mangold seed on the flat with artificial manures in a similar manner to the drilling of clover seed. In case farmyard or town dung is applied it is a good plan to ridge or stretch the land about 2 feet wide and lay the dung out and spread between the stretches, then plough and reverse the stretches, the dung will then be turned in the centre of the ridge. In this way by hand-dribbling the seed, with two or three seeds in a hole buried about 1 inch in depth at about 6 inches apart, if the land is moist and fine this is the surest way to obtain a regular plant, and always enables the horse hoe to be worked eight or ten days earlier than when the seed is drilled on the flat. We can assure the horse farmer that in this way we have generally grown a heavier weight of roots per acre than in any other way. The sowing should be done by women, for when they are accustomed to the work they are more nimble than men, and will do more at this kind of work.

Hand Labour.—The men will now be employed in draining, and also hedging where not yet finished. Making what is called a dead hedge, especially on some of the chalk hill farms, is a matter of some importance, as it frequently happens that there are but few live fences to be found in the hill districts. The dead hedges should now be completed, and while the rods and bushes are supple, for after they become stiff and hard it is more difficult to complete the work in a proper manner. The women will be required in weeding and stone-picking, and where chalk has been laid out and large lumps have come to the surface in working the land they should be broken with a hammer. If left on the surface during the summer the knobs of chalk become almost as hard as a stone, and instead of yielding and breaking down by the frost in the succeeding winter they will resist the action of frost, and prove only an impediment to the tillage, instead of being in active operation within the soil. Shepherds now will have their ewes and lambs feeding in the water meadows or parklands, but they should be changed from grass to the arable land at night, where they should have in succession first rye or Italian rye grass, then trifolium as soon as it becomes forward enough for feeding. These changes, although they are essential to the welfare of the breeding flocks, are sometimes the cause of scour and other sickness in the lambs, the cause of which generally rests with the ewe by either having too much or too little milk. This matter, therefore, should have special attention by the shepherd. The dairy cows should now be allowed to graze for their living principally, but where the grass is deficient it should be supplemented by cake or meal until green fodder can be cut up, for then they may with advantage get a batch of either trifolium or vetches at the time of milking—night and morning. The bullocks which have been wintered in yards in readiness for turning out to graze on the best pastures there to be fattened should not be turned out until there is plenty of grass. It is well even then that at night time, until after the first week in May, they should return to the yards and receive an allowance of bean or barley meal mixed with roots or chaff for several weeks.

MOLES.

PERMIT me to suggest that the wisdom of the advice recently given in the Journal to trap moles is open to question. I possess a farm of about 200 acres of grass land, and moles have been present in my pastures for twenty-five years. For several years after I commenced reclaiming this land from common, I adopted the prevalent practice and employed a man to trap the little creatures. Reflection induced me to discharge the mole murderer. I felt convinced, and I have never changed my opinion, that Providence had some object in creating these animals which are so well fitted as regards frame and powers for burrowing under ground in search of something. What that something may be, is the question. My opinion is that it is wireworms. Now wireworms must be injurious to vegetation, while the earth ejected by moles when spread is without doubt beneficial to vegetation; in fact, as I can testify from years of observation, such earth promotes the growth of herbage quite as much as manuring.

Another observation which I have made has been that moles migrate from one pasture to another; that when they have completed their sinuous subsoil operations in one part of a farm they go to another where their services are required; and that, after the molehills have been once spread, not only do the moles desert that portion but the land assumes a freshness of verdure which it did not previously possess.

I advocate life and not death to the moles. I certainly think that the attention of the Society for Prevention of Cruelty to Animals ought to be called to the question whether agricultural science cannot devise some chemical application to the land which shall have the effect of destroying that which the mole is employed

to destroy, and thus render its presence no longer matter of annoyance to the farmer.—*ACRICOLA, Shildersfield.*

PHEASANT FOWLS.

WHEN I was a poor curate I used to keep these, and they kept me. They are very handsome, being Golden-spangled Hamburgs crossed by a Game cock. They are good layers, good sitters and mothers, and usually had twelve or thirteen chickens in a brood. I can confidently recommend them. Their flesh in flavour is nearly as good as that of Pheasants.—*W. F. RANDLYFFE.*

BREEDING FOWLS.

A FRIEND of mine tells me it is not necessary to keep constantly a cock with fowls to fertilize the eggs. He says if I put a cock with five or six hens at the commencement of the laying season for a few days, that is all that is necessary to render all the eggs laid fertile. Therefore, if I have half a dozen Brahma hens, a Brahma cock, and a Dorking cock in one pen, it is of no avail any removing the Dorking cock with the object of obtaining pure Brahma eggs for hatching, as impregnation will, according to my friend, show itself more or less in all the eggs laid during the season. I can easily understand it would affect the first egg and perhaps the second egg laid after the separation, but I cannot believe any more. Will you kindly tell me how much truth there is in his statement?—*F. M. M.*

[We shall be obliged by answers to the above from experienced poultry-keepers.—*Eds.*]

TURKEY HENS AS MOTHERS.

IN France Turkey hens and cocks too, are often employed to incubate large numbers of hens' eggs. They are trained to their duty in a cruel manner, and are often kept to it for months together, a fresh sitting of eggs being supplied as soon as one has been duly hatched out. Fortunately no practice of the kind has ever been common with us, and the rapid progress in artificial incubation which has of late been made would in any case make it superfluous. A difficulty, however, arises about the rearing of chickens hatched in incubators. It is true that there are many excellent artificial "mothers" offered to the public in these days, some of which can easily be imitated by any ingenious contriver, but artificial mothers do not suit the circumstances of all poultry fanciers. Everybody with any experience in such matters well knows the evil of overcrowding chickens; when kept in large numbers together they may and often will thrive well for a time, but after a while they become unaccountably less bright, they cease to grow fast, and are soon passed by any younger birds living in small flocks. We have year after year observed this, and it is the difficulty of artificial rearing. Our belief is that an artificial mother will do well enough for those who only rear about twenty birds, or on the other hand for those who rear solely for sale or the table, for then the young flock may be killed off, or at least greatly thinned before the critical time comes on. For those who rear a considerable number of chickens, say from one hundred to two hundred, and wish to have fine specimens fit for exhibition if required, or at any rate promising stock birds, artificial mothers are not suitable. It is true that last season we saw several remarkably handsome Dorking cockerels from the yards of a lady who reared all her broods artificially, but such are quite the exception.

If, then, an incubator is used how are chickens to be reared? We strongly recommend Turkey hens after trying them for several years. Before we ever depended on artificial hatching we often used Turkey hens both as sitters and mothers. Of course they will seldom lay quite in the winter like Brahmas, Cochins, and Dorking pullets, but with good feeding they will often do so in the beginning of February, and when once they begin they lay regularly and sit soon. When eggs are already in an incubator the hatching time of the Turkey may practically be advanced a fortnight, as eggs can be transferred to her which are already within a week of hatching. As we mentioned not long ago, the Turkey possesses the great merit of sitting when broody wherever she is placed, and we never knew an instance in which one deserted her eggs. At first sight it would appear as if the great weight and long legs of the Turkey must cause the breaking of the smaller and more thinly shelled eggs of the common fowl, but this is not the case; they have a peculiar knack of creeping on to the nests and slipping their long legs carefully between the eggs. We never knew but one Turkey which failed as a mother, and she did so simply from over-assiduity when the eggs were just chipped, which caused her to sit too closely and crush half of them. A bird which does this should at once be rejected.

The Turkey is very jealous of all interference when hatching, and pecks violently, so should as far as possible be left alone. Never attempt to catch a Turkey by the wing, it will inevitably struggle violently till the greater part of the wing feathers are left in the hand. When the brood is hatched remove them with

a stout pair of gloves to protect the hands, taking care to keep the chickens well inside in the hand, and so away from their foster-mother's beak, and then lift the hen off the nest by the body and legs. In the coops she is the quietest of mothers, and never jumps about in the provoking manner that common hens so often do. A good-sized Turkey hen will cover well from fifteen to twenty chickens. The time at which we have found the greatest benefit from rearing chickens in this way is when they are strong enough for their foster-mother to be let loose with them. A Turkey will wander far but seldom move rapidly; it is a pretty sight to see one standing about quietly in copse or meadow while her young brood around is searching diligently for insect or vegetable provender. We have invariably found chickens reared under a Turkey hen come to a great size. They do not outgrow their strength and suffer from leg-weakness as many do which are forced in small yards into premature development, but through all their stages they keep up a steady progress without stop or failing, and eventually prove both large and strong birds.

Occasionally we have let a Turkey hen sit a second time; the chickens thus reared in autumn benefit much by the mother's extra warmth when chilly nights come on, and continue to grow when others pine and sneeze. We are now hatching by artificial means, but find artificial rearing not suited to our circumstances. There must be many other fanciers the scale of whose yards more or less resemble our own; we cannot but recommend them to try a few Turkey hens as well as their own ordinary sitters, and are always glad to hear the result of such experience.—C.

VARIETIES.

THE BRITISH BEE-KEEPERS' ASSOCIATION.—The quarterly Meeting of the British Bee-keepers' Association was held at 445, Strand, on the 14th inst., when the representatives of the affiliated county associations met to confer with the Committee of the central Society. A code of rules and regulations for strengthening the relations between the central and the affiliated associations were read over and discussed, and it was resolved to send copies of the same to the Secretaries of all the affiliated associations with a view to further discussion at the next quarterly Meeting that will be held on one of the days of the South Kensington Show. Rules and regulations for the formation of village clubs for bee-keepers were laid before the Meeting by Mr. F. Lemare, the Hon. Secretary of the Surrey County Association, who gave an interesting account of the steps which had been taken in this direction in some of the Surrey villages. This scheme is likely to become general where county associations are formed, and to be found a very effective means of instructing cottagers in the improved methods of bee-keeping. At the request of Mr. Garrett, Hon. Secretary of the West Kent Association, the Chairman, Mr. T. W. Cowan, undertook to draw up a set of suggestive schedules according to certain tariffs of prize money for the benefit of county and local secretaries of exhibitions of bees, hives, and honey. After the usual interval for tea and coffee the Conversations commenced, the chair being taken by Dr. Lionel S. Beale, F.R.S. A paper was read by Mr. John Hunter on "The future of British bee-keeping in a commercial point of view, and how the working classes can be most successfully aided and taught the truths and advantages of modern bee culture." The topics touched upon were discussed by many of the members present, and the paper appeared to give general satisfaction. The Meeting, which had commenced at 4 P.M., was terminated about 8 o'clock. On Thursday a small party of the members visited the Duke of Rutland's Gardens at Belvoir Castle by the invitation of Mr. W. Ingram.

WHITE JAVA SPARROWS.—The Japanese seem to treat the White Java Sparrows very much like a breeding machine. Each pair is put into a small cage with only one perch and a nest. By means of very careful feeding the birds are brought to lay freely, and ingeniously contrived paper screens prevent the hen birds being disturbed whilst sitting. As soon as the young are hatched, the Japanese breeder takes their care into his own hands, and with infinite trouble rears the brood by hand. Thereby he avoids not only the risk of the parent birds neglecting their progeny, but also saves time, for whilst the Japanese bird breeder is rearing the nestlings the parent birds are hatching another brood. The visitor to a Japanese breeding establishment will see a row of small straw baskets on the floor, each provided with a lid of straw matting. An attendant will lift one lid after the other and disclose a nest of chirping Java Sparrows under each; and in each open beak a mouthful of millet seed, scalded with some vegetable decoction, will be conveyed by a sort of spoon out of a thin bamboo. In the climate of Japan this purely vegetable food seems to suffice for the young White Java Sparrows. In Europe they require a slight addition of egg food to rear young birds successfully.—(From "Canaries and Cage-Birds.")

MILK IN CATTLE-BREEDING DISTRICTS.—Mr. John Milne, farmer, Mains, in an address recently delivered on dairy farming, observed:—"In cattle-breeding districts the production of milk can scarcely be said to be of secondary importance; for it will not

pay to keep a cow a whole year simply to rear a calf. If a cow is to be of any profit to her owner she must have sufficient milk not only to rear her calf but to yield something besides. A cow of average size should yield about 550 gallons of milk annually; the value of that milk for sale in country districts is about 9d. per gallon, and it is worth about the same if made into butter and cheese. Its value in the larger towns and cities, delivered, is from 1s. 2d. to 1s. 4d. per gallon. At these prices the yearly produce of an average cow in milk is from £20 12s. 6d. to £34 7s. 6d. If the cow is of the Shorthorn or of a good cross breed, the calf when a week old should be worth £8. The value of the produce of an average cow, if milked, is therefore at least £28 12s. 6d. annually; while if sent direct to our cities for sale the production of milk is one of the most profitable, if not absolutely the most profitable, method the farmer has of manufacturing his crops into money. In the north of Scotland a considerable number of cows are kept that do nothing more than suckle their calves, which, taking a very favourable view, cannot on an average, when six months old, be worth more than £12. There is thus a difference in favour of milking of at least £11 12s. 6d., against which has to be put the cost and labour, amounting to between £1 and £2 per cow."

THE FOOD OF DAIRY COWS.—From the same authority we cite the following:—"Of all cattle foods grass is the most natural, and rich old grass, containing a variety of plants in its composition, is perhaps the food for producing the best quality of milk; but the extent of rich old grass in this kingdom is very limited. A large part of our pastures, whether old or under rotation, are rather inferior in quality, and quite incapable, unaided by other foods, in furnishing cows with the materials with which to produce the largest quantity and best quality of milk. It is unfortunately true that both at home and abroad a large proportion of cows are kept on poor bare pasture without any assistance in the way of house feeding. To aid us in considering the kinds of food most suitable for the production of milk it will be well to note its average composition. The quality of milk varies with the different breeds of cattle, and with the same animal at different periods of the year, due partly to the quality of food, and also to the period the cow has been milked. Even the age of the animal has an influence. Old cows yield milk much thinner than young ones of the same breed. Rich pasture or rich food has a powerful influence upon the quality of the milk. Average milk contains in 100 parts:—Water, 87.00; albuminoids, 4.80; fats, 8.80; sugar, 4.28; and ash, 0.82. Normal milk then contains about 18 per cent. of solid matter, and this solid matter is made up of nearly equal parts of albuminoids, fats, and sugar, with fully one-half per cent. of ash or mineral matter, consisting chiefly of phosphate of lime and common salt. Milk is, therefore, unusually rich in nitrogenous compounds and fat, and presumably foods rich in these constituents are required by dairy cows. Experience confirms this theory; for foods rich in albuminoids, such as rape cake, bean meal, and wheat bran, are found to increase the milk production in a remarkable degree. Cows grazing in poor pastures, in which the albuminoids are deficient and the woody fibre is in excess, if in full milk will well repay an outlay for artificial food, which may consist of 8 lbs. of rape or decorticated cotton cake, 1 lb. of bran, and 2 lbs. of bean meal daily, the whole costing from 8s. to 8s. 6d. per week. By this means the cow will be kept in good condition, a large flow of rich milk will be obtained, and the pasture, which is apt to become reduced and exhausted by the grazing of dairy cows, will be improved."

SPARE COMBS.

I HAVE several times referred to the use of spare combs in an apiary, but their importance deserves a special notice. Wax is undoubtedly the most costly material produced by the bees, being only elaborated after an unusual consumption of honey and a period of enforced idleness. It is somewhat difficult to fix its relative value compared with honey, but it is well known that it requires from 15 to 20 lbs. of honey to make 1 lb. of wax. The loss of honey that might have been gathered by the wax-makers, had they been relieved of their indoor task, would make a considerable addition to the above estimate. Now it is evident that the commercial value of wax is very much below its value as comb, and that the bee-keeper who melts down the latter often does so to his direct loss. It should be a rule, at least among bar-framers, never to destroy a comb unless for such faults as age, disease, or incurable crookedness. Scraps alone should go to the melting pot. Even the drone comb should be preserved, as it suits best for use with the extractor. The following are a few of the cases in which spare combs are evidently of great value. 1, In building up stocks, whether regular swarms, bees driven in the fall, or those transferred in spring. In either case, if ready combs can be supplied, we gain an advantage quite equal to doubling the numbers of bees. 2, In cases of foul brood, or even bad forms of dysentery, fresh combs are almost a necessity. 3, In what is called spreading the brood. This is one of the best forms of stimulus in early summer, and consists in inserting fresh combs at intervals right in the centre of the brood nest. 4, In doubling

for the extractor—that is, when a second storey is added at the commencement of the honey harvest, to be used solely for extracted honey. Drone or worker comb that has been bred in for a season or two is here of the greatest advantage. 5. In forming nuclei. A nucleus is a stock in miniature, and is useful for preserving spare queens, hatching out royal cells, &c. A nucleus may often be profitably formed when it would not be wise to take a full swarm. Or as many bees as will form one, along with the queen, may be taken from a swarm and the rest returned to the parent hive. In such cases it is absolutely necessary to supply the combs.

Now let us see how such a supply of spare combs can be obtained. The autumn overhaul yields us a great many, for then we crowd our bees on to only as many combs as they can cover, placing chaff or cushions outside the division boards. Thus we may obtain from two to six from each hive. In spring we generally find it of advantage to remove one or two more from each hive; and as we find comb foundation as good as comb for spreading the brood, we reserve all removed combs for summer use. Even in summer we can easily add to our reserve by replacing combs taken for the extractor with comb foundation. Thus in time we may have a full set of spare combs for each hive, and in this way almost relieve our bees from the necessity of building comb at all except in supers. Even there we may most profitably carry out our idea, and be able to furnish each super with virgin comb from our reserve.

Although not much regarded I have an idea that in this line our American friends have to a great extent the advantage of us. They consider a full stock of spare combs as a necessary part of their supplies, and as they lose a considerable per-centage of stocks during their severe winters, they obtain these without special effort.

To preserve spare combs during winter it is necessary in the first place to secure them dry and as free as possible from unsealed honey and pollen. The former will absorb moisture and ferment, the latter will be apt to get mouldy. Thus it is well to pass all such through the extractor. As many as can be hung in a top storey should then be placed over a hive for a night, in order that the bees may dry all up. The combs containing much pollen had better be returned to the hives; the rest should then be stored in a dry room, either hung on racks near the ceiling or piled in empty hives. Should wax moths make their appearance the combs may be fumigated with sulphur; and if there is any suspicion of foul brood, each comb should be well sprayed with the solution of salicylic acid before being again used.—WILLIAM RAITT, *Blairgowrie*.

OUR LETTER BOX.

ADDRESS (F. E. Hutchinson).—The address of the Honorary Secretary of the British Bee-keepers' Association is Rev. Herbert R. Peel, Abbot's Hill, Hemel Hempstead, Herts.

SPANISH HEN (F. Bell).—She is probably ruptured, and if so no treatment will cure her.

CHICKENS GAPING (J. M. A.).—They have the gapes. Put them into a box, and place in the box at the same time a sponge dipped in spirit of turpentine on a hot-water plate filled with boiling water. Repeat this for three or four days. But the most easily applied and effective preventive as well as cure is to give the chickens affected a pellet of camphor daily, about the size of a small pea, and to have a piece of camphor in the water they drink. The cause is unwholesome diet and want of green food.

AYLESBURY DUCKS (D. P.).—They are good layers; one has been known to produce 180 eggs within the year, and they weigh quite 3 ozs.; the shell is thin and French white. They are better sitters than the Rouens.

PRICKLY COMFREY (H. L.).—It may be raised from seed by sowing it in the spring in drills to remain, or the seedlings to be planted out. It grows 5 feet high. It may be further propagated by dividing the roots in autumn or early spring. Each piece will grow, and they should be planted about 3 feet apart. They are quite hardy, and need no culture but weeding.

SALTING BUTTER (Mrs. Godley).—When the butter is taken from the churn it is washed, and then put in a straining cloth and beaten with the hand so that all the water and buttermilk may be extracted. The butter is then salted and beaten, so that the salt may be thoroughly incorporated with it; the quantity of salt may be nearly a tablespoonful to 1 lb. of butter. The butter may then be put into a firkin or cask in layers about 3 inches in thickness and pressed down firmly. Fine salt, with a small portion of fine white loaf sugar mixed, should be strewn over each layer of butter sufficient to show white on the surface; but the last layer of butter instead of being salted over should have a covering of brine an inch deep, so as to stop all crevices between the butter and the cask, and thus entirely exclude the air. Before placing in the butter the cask should be washed with pure brine inside. The butter should be made every second or third day to obtain it of the best quality. This is our own practice, and we know of no pamphlet giving us information that we care to rely upon.

TAKING WINGS FROM QUEENS (A. Boyle).—This has been explained in this Journal, and probably is not mentioned in the "Handy Book of Bees." As another edition of this work is called for and will shortly appear the simple process of winging queens will be alluded to. The work of catching queens and clipping a wing from each should be done on a warm day some time before the bees are ready to swarm. With straw hives or hives with fixed combs some of the bees and queens are driven into empty hives, in which the queens are caught; and with moveable-comb hives the combs are lifted out one by one till the queens are seen. With both kinds of hives the work is done in a few minutes.

SECTIONAL SUPERS (K. B.).—They should not be used without strips of guide comb inserted in a saw cut down the centre of each or run in with wax, for which purpose Abbott's smelter is very useful. Between each section should be put a strip of tin, glass, very thin board, or perforated zinc; the latter is the best to cause the bees to build straight. The wax guide when secured to the top of the super should not exceed half an inch in depth, as when there is plenty of honey to be had the bees do not spend much time in thinning it down, consequently it would prove detrimental to the honey if guides were left very deep. The wax sheets, supers, and other requisites can be purchased at Messrs. Neighbours', Holborn. The sheets can be cut to suit supers of any size, and by the use of the smelter they can be run in very quickly.

NEIGHBOURS' HIVE AND CHEESEBOX (E. Cook).—The 11th of April is an unusually early day for the appearance of "a great quantity of drones." We fear this is an indication of an imperfectly developed queen, a drone-breeder in fact. You should carefully watch the hive to see if there is a corresponding increase of young worker bees; if not, the stock is worthless and will not swarm. With regard to driving it is really a very simple operation, and almost necessary to a successful bee-keeper. We advise you to make trial of it and persevere till you succeed. To give you courage be well protected with a bee dress and gloves, and use freely the smoke of fustian or brown paper. Your project for increasing your stock may succeed provided there is worker brood of all ages (and eggs also) in the Stewarton at the time you carry your design into execution, otherwise it would certainly fail. You ought to see to it also that the queen remains in the cheesebox, otherwise failure would probably attend that move. On the whole, as you are evidently in your novitiate, we do not advise you to carry out this plan. Better far put new swarms into the two Woodbury's and establish them as quite distinct stocks, the more so as there seems to be an imperfect queen in your present stock.

METHEOLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.				IN THE DAY.						Rain.
1880.	Baromet- er at 3 and Sea Level	Hygrome- ter.		Direction of Wind.	Temp. of Sun at 1 foot.	Shade Tem- perature.		Radiation Temperature.			
April.		Dry.	Wet.			Max.	Min.	In sun.	On grass.		
	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	In- ches.	
Sun. 11	29.983	42.5	39.5	N. E.	44.0	50.5	37.5	90.1	35.5	—	
Mo. 12	29.988	46.5	45.5	N. E.	43.5	53.5	35.4	96.9	34.0	0.085	
Tu. 13	29.989	49.4	47.5	N. E.	44.0	53.5	38.1	95.9	34.5	0.141	
We. 14	29.714	45.5	45.5	N. E.	45.5	55.5	44.5	65.5	43.4	0.731	
Th. 15	29.697	44.5	48.5	E.	45.5	49.5	41.4	55.5	41.9	0.940	
Fri. 16	29.745	50.0	47.4	S.	44.7	57.5	39.5	110.0	51.5	—	
Sat. 17	29.854	55.0	49.9	S. E.	45.0	64.0	36.5	111.5	39.5	—	
Means.	29.685	47.7	45.4		44.5	55.1	39.1	89.5	45.5	1.187	

REMARKS.

11th.—Generally overcast and cold day, slight rain in morning, brighter at 5 P.M. with sunshine; fair evening.
12th.—Fine and bright in morning; overcast with cold showers from noon till 4.30 P.M., when the sky became clear; bright sunshine for short time; overcast evening.
13th.—Fair day and cool; not much sunshine.
14th.—Rain throughout the day, but slight after 6 P.M.
15th.—Overcast morning; slight rain from noon.
16th.—Fine pleasant day throughout; starlight evening.
17th.—Foggy in early morning; fine day with a good deal of sunshine, but slightly dull at intervals; fine evening.
A variable week, without any very marked variations of temperature; very wet on 14th. Warm on Saturday.—G. J. SYMONS.

COVENT GARDEN MARKET.—APRIL 21.

TRADE is again quiet, all sorts of forced fruits and vegetables being with difficulty cleared even at low figures.

FRUIT.

	s. d.	s. d.	s. d.		s. d.	s. d.	s. d.
Apples.....	1	0	0	Nectarines	dozen	0	0
Apricots.....	dozen	0	0	Oranges	100	4	0
Cherries.....	box	0	0	Peaches	dozen	0	0
Chestnuts.....	bushel	12	0	Pears, Kitchen..	dozen	0	0
Figs.....	dozen	0	0	dessert.....	dozen	3	0
Filberts.....	1 lb.	0	0	Fine Apples	1 lb.	1	0
Gobs.....	1 lb.	0	0	Plums	1 sieve	0	0
Gooseberries ..	1 sieve	0	0	Raspberries	1 lb.	0	0
Grapes, hothouse	1 lb.	0	0	Strawberries....	1 lb.	0	0
Lemons.....	100	0	0	Walnuts.....	bushel	0	0
Melons.....	each	0	0	ditto	100	0	0

VEGETABLES.

	s. d.	s. d.	s. d.		s. d.	s. d.	s. d.
Artichokes.....	dozen	3	0	Mushrooms	pottle	1	0
Asparagus.....	bundle	1	0	Mustard & Cress	bunch	0	0
Beans, kidney ..	100	1	0	Onions	bushel	3	0
Beet, Red.....	dozen	1	0	pickling	quart	0	0
Broccoli.....	dozen	0	0	Parsley.....	doz. bunches	6	0
Brussels Sprouts	1 sieve	0	0	Parsnips.....	dozen	1	0
Cabbage.....	dozen	1	0	Peas	quart	0	0
Carrots.....	bunch	0	0	Potatoes.....	bushel	3	0
Capiculus.....	100	1	0	Kidney.....	bushel	4	0
Cauliflowers ..	dozen	0	0	Radishes.....	doz. bunches	1	0
Celery.....	bundle	1	0	Rhubarb.....	bundle	0	0
Coleworts.....	doz. bunches	3	0	Salsify.....	bundle	1	0
Cucumbers.....	each	0	0	Scorzonera.....	bundle	1	0
Endive.....	dozen	1	0	Seakale.....	basket	2	0
Fennel.....	bunch	0	0	Shallots.....	1 lb.	0	0
Garlic.....	1 lb.	0	0	Spinach.....	bushel	3	0
Herbs.....	bunch	0	0	Turnips.....	bunch	0	0
Leeks.....	bunch	0	0	Vegetable Marrows	each	0	0

WEEKLY CALENDAR.

Day of Month	Day of Week	APRIL 29—MAY 5, 1880.	Average Temperature near London.			Sun Rises.	Sun Sets.	Moon Rises.	Moon Sets.	Moon's Ago.	Clock after Sun.	Day of Year.
			Day.	Night	Mean.	h. m.	h. m.	h. m.	h. m.	Days.	m. s.	
29	TH	Royal Society at 8.30 P.M.	60.5	37.3	49.0	4 37	7 18	0 11	8 2	20	2 49	180
30	F		61.0	39.1	50.1	4 35	7 19	0 51	9 23	21	2 57	121
1	S	5TH SUNDAY AFTER EASTER. Aimé Bonpland died, 1838. Dr. Livingstone died, 1873. Society of Arts at 8 P.M.	61.4	39.3	50.3	4 33	7 21	1 20	10 44	22	3 5	122
2	SUN		62.7	39.1	50.9	4 31	7 23	1 43	0 a 3	23	3 12	123
3	M		62.4	42.2	52.3	4 29	7 24	2 2	1 19	24	3 18	124
4	TU		62.4	38.5	50.5	4 27	7 26	2 18	2 53	25	3 24	125
5	W		62.9	39.0	50.9	4 25	7 27	2 34	3 44	26	3 29	126

From observations taken near London during forty-three years, the average day temperature of the week is 61.9°; and its night temperature 37.5°.

EARLY-FLOWERING PELARGONIUMS.

AMONG the numerous plants which form such a brilliant display in the Covent Garden Flower Market during the present month, few are more admired by casual visitors than those Pelargoniums that partake of the Regal and Show types, and which are commonly known by the appropriate but not distinctive name of "decorative Pelargoniums." These handsome plants comprise a large number of varieties distinguished by the possession of several excellent qualities, which render them such popular favourites that their culture receives a very large share of attention from the nurserymen and florists who grow plants chiefly or exclusively for market. The flowers, in the majority of the varieties that are largely grown, do not possess the smoothness and regularity of form which characterise the show Pelargoniums, but they are extremely freely produced in enormous trusses, and the colours are very brilliant and diversified. Further, under good management the plants are sturdy and compact in habit, with rich dark green foliage, and they can be easily had in flower from early March onwards. Many of the varieties also have blooms with beautifully crimped or fringed margins that add considerably to their attractions and admirably fit them for employment in bouquets, &c. Indeed nearly all the varieties are remarkably well adapted to supply blooms for cutting, and large numbers of plants are grown for that purpose alone. As regards the employment of this section of Pelargoniums for general decoration, their value is really inestimable during March, April, and May, and that they are very widely appreciated for this purpose may be judged from the immense numbers annually brought to market. One firm alone, Messrs. G. Beckwith & Sons of Tottenham, propagate upwards of seventy thousand plants every year, while many other growers, such as Mr. Brown of Hendon, and Mr. Wetherall of Finchley, also grow them extensively, though no single firm rivals the first mentioned in point of numbers.

The majority of the plants that appear in the market are compact vigorous specimens, about 18 inches in height and nearly the same in diameter, clothed with foliage down to the rims of the pots, and bearing a dozen or more dense trusses of large flowers. They are chiefly one-year-old plants in 48-size pots, and although cut-backs in larger pots are numerous, the former are most in demand. Better examples of cultural skill could scarcely be seen, for the shoots are exceptionally stout, firm, and short-jointed, starting from the main stem an inch or two above the soil, while the leaves are thick, of a rich healthy green colour, and often 4 or 5 inches in length and breadth. Among the many thousands of plants in the nurseries of the best growers scarcely one can be seen that indicates the slightest approach to the drawn sickly appearance which marks too many Pelargoniums in private collections. Green fly, the invariable attendant on bad cultivation, causes little trouble to these wholesale growers, whose every effort is directed to ensure vigorous growth and perfect maturation of the

wood and foliage. Much can be learned from these cultivators, for, as in all cases of growing for profit, the most economical means of producing the best results are generally adopted—two points of considerable importance not only to them but to gardeners also. Therefore a few particulars concerning the treatment these useful Pelargoniums receive from the most successful growers may prove serviceable to some readers of this Journal.

The systems adopted by different cultivators vary slightly, but only in minor details, and these will be referred to as we follow the progress of the plant from the cutting state until ready for market. First as to the important operation of propagation, which it will be readily understood must be commenced early to give the plants all the time possible for making growth, if they are to be good specimens by the following spring. The earliest cuttings are obtained from the plants now being sent to market, and consist of the side shoots from the principal branches, which are removed without any detriment to the appearance of the plants. These cuttings are prepared in the ordinary way, and inserted singly in the centres of large thumbs or 60-size pots in a light compost of loam and sand, sometimes with the addition of a little leaf soil. The pots are placed on shelves in one of the houses, usually where plants are being advanced into bloom by a slightly higher temperature. Shading is necessary until the cuttings are well rooted, and water is carefully supplied, as the early cuttings, not being so firm as those obtained later on, are very liable to damp off. Propagation is continued throughout the next two or three months, but the cuttings are then obtained from plants in stock, all those with the best coloured and finest flowers being selected for the purpose. Short-jointed firm shoots are chosen in preference to such as are less matured, and very much of the after success is found to depend upon attention to this matter. These are inserted in similar soil as the first batch, but usually three or four in a large 60-pot, or a greater number in one of the 48-size. As the sun is powerful at that time shading receives especial attention, so as to prevent the leaves "flagging" excessively.

The cuttings that are inserted singly in small pots remain in them until roots have been well formed, when the young plants are at once shifted into 48-size pots, the size in which they are sent to market. The soil employed consists of rather heavy turfy loam that has been stored up for some time previously to use, from which only the roughest portion is removed, the rest being broken up with a spade. A small quantity of sand is added, and occasionally some horse manure or Clay's fertiliser; but the two latter, where the loam is good, are by no means indispensable ingredients, although they appear to have a beneficial influence on the colours of the flowers. The pots are either new or perfectly cleaned, so as to prevent the soil and roots from adhering to the inner surface. The drainage consists of potsherds or broken bricks, the former being more generally employed, the very robust-growing varieties only requiring a single piece placed concave side downwards over the hole, but those that are more delicate in habit need several pieces. As to the system of potting, some advocate ramming the soil in to the pots as firmly as possible, while others only

render it moderately firm. Good results are produced by both practices, but the former is preferred. The cuttings, struck several together, are, as they become well rooted, shifted into thumbs or 60-size pots, and subsequently when well established they are transferred into 48's in successional batches from September to Christmas, so as to maintain the supply of flowering plants from March to July. In all cases the houses containing the newly potted plants are kept rather warmer and partially shaded for a short time until the plants have recovered from the effects of potting, when a lower temperature and abundant ventilation are requisite.

During the autumn and winter months the plants continue steadily growing, only sufficient heat being employed to evaporate excessive moisture and prevent injury by frost. Free exposure to light, constant ventilation when the weather is not too severe, and careful attention to the supply of water, are the principal means of ensuring a vigorous habit and profusion of bloom. The benefit of light and ventilation is well shown by the condition of the plants in the houses at Messrs. Beckwith's of Tottenham. These are low span-roofed houses, and are so constructed that there is scarcely any obstruction of light. The framework is entirely of iron, the rafters being very thin and placed widely apart. The glass is large and overlaps at the apex of the house, as there is no ridge bar, and the sides of the houses, from the eaves down to the level of the stages, are also glazed. A path extends from end to end down the centre, on each side being a flat stage. The ventilators at the apex of the houses consist of small glazed lights, which are opened from the centre upwards and outwards, and of long wide boards on hinges, which are placed in the walls beneath the stages. The most abundant ventilation and the freest exposure to light can thus be ensured, and as a result the plants are remarkably dwarf and strong, with foliage of extraordinary vigour. The stages are either open—i.e., formed of narrow boards placed an inch or two apart—or they are covered with small cinders, on which the plants are arranged. Sometimes, too, they are half plunged in cocoa-nut fibre, an excellent way of keeping them constantly moist in the spring. The foliage is preserved clean and healthy by syringing with clear rain water in all suitable weather, especially during summer, early autumn, and when the days commence lengthening, and upon the first appearance of green fly fumigation is resorted to, so that the pest never gains sufficient hold to do much harm.

With regard to training, the chief point is to pinch the young plants back sufficiently early to induce the production of the necessary shoots to form the specimen. When the plants have about five nodes above the soil the centre bud is removed; if a growth starts from each of these nodes one or more is again pinched back at once, so that about seven or eight good shoots are ultimately obtained that start from the chief stem a very short distance above the soil. As soon as the flower buds are showing in the early part of the year small light stakes are placed to each growth, and if the latter be so long as to spoil the symmetry of the plant the support is forced an inch or two into the soil, the shoot is then secured to it, and can be brought to any level by forcing the stake lower in the soil. When it is required to hasten the flowering, say in February or March for the earliest, the temperature of the house is slightly increased and the ventilation diminished, and if the weather be bright a light stippling is applied to the glass to prevent the sun from scorching the foliage or injuring the flowers. By this system there is a constant succession of flowers from March until July, and even in such an unfavourable season as the present one for inducing early blooming the market has been supplied with plants for the past five or six weeks.

The varieties are very numerous, Messrs. Beckwith alone cultivating over thirty, while Mr. Brown has also a great number, mostly seedlings, of his own raising. It would be unnecessary to enumerate all these, but the following is a selection of the best and most generally grown:—

Duchess of Bedford.—A handsome and useful free-flowering variety, of dwarf compact habit, and very early. The flowers are pure white, with a fringed margin and a rose-coloured feathery spot in the upper petals. A sport from Digby Grand.

Duchess of Edinburgh.—Similar to the above in all its good qualities, the flowers being also white, handsomely fringed, the blotch in the upper petals being of a deeper purplish tinge.

Triomphe de St. Mandé.—Flowers of a rich crimson hue, the upper petals very much darker. Trusses of enormous size and freely produced. One of the best market varieties.

Mabel.—A very striking deeply coloured flower, the upper petals very dark rich maroon, with a narrow lighter margin;

moderately free, and of good habit. This and the three following are some of the few show varieties suitable for market.

Rob Roy.—Good flower, with nearly black purple margined upper petals, purplish rose-coloured lower petals, and a white eye.

Challenger.—A showy variety, with large flowers and trusses. Petals rich crimson scarlet spotted with maroon. Very distinct and attractive.

Digby Grand.—Flowers in large trusses. Petals handsomely fringed, white, the upper relieved by a deep crimson blotch.

James Braide.—A remarkably free and handsome early variety, with large showy flowers in enormous trusses. Petals almost scarlet, the upper with a dark feathery blotch in the centre. Eye purplish, a very narrow margin of the same colour extending round the petals.

Kingston Beauty.—A fine variety, of excellent habit, and very profuse in flowering. Petals white, with a purple blotch in each.

Monte Christo.—An early form of considerable beauty. Flowers of moderate size. Lower petals pale bluish, upper streaked with rose.

T. A. Dixon.—A very free and early variety, with large showy crimson flowers; the upper petals having a large deep blotch.

Chameleon.—Flowers of moderate size, very freely produced. Petals bright crimson scarlet, with a narrow white margin. Very pretty and useful.

The present is a good time for obtaining a collection of these *Pelargoniums*, and they are as admirably adapted for amateurs who have only a small greenhouse, or other cool house, as they are for the gardener under whose charge is a large conservatory in which a constant succession of flowering plants has to be maintained. If plants are purchased now cuttings should be taken as soon as possible, and some of the plants could be cut down at once for the purpose. The after treatment required is indicated in the foregoing remarks.—L. CASTLE.

HARDY WINTER AND SPRING VEGETABLES.

AFTER the late severe winter and the consequent scarcity of vegetables now being experienced it is important to ascertain which varieties of Broccolis, Kales, &c., are the most hardy, so that these may be cultivated to prevent, as far as possible, another period of scarcity occurring. It would be useful if those who have vegetables that have survived the winter would state the varieties and the conditions under which they were grown. Mr. Muir has set an example in one respect; he has named what he considers the most hardy of this class of vegetables—namely, the *Chou de Milan Suisse*, but he did not intimate the extent of frost it had resisted. The crop referred to was, I think, grown in a district where the winters are not nearly so severe as we have them in the north, therefore as the matter now stands we cannot judge so fully as is desirable of the real hardness of the new vegetable referred to, nor of its adaptability for cold districts. I do not desire to imply that the *Chou de Milan Suisse* is not all that is claimed for it, but only submit that Mr. Muir's experience has been gained under more favourable circumstances than the majority of gardeners enjoy. It would be instructive to know of the severity of frost at Margam, and also whether it was sufficient to kill such crops as Brussels Sprouts and the Scotch Curled and Cottagers' Kales. If these are destroyed where the *Chou de Milan Suisse* is uninjured, then indeed the latter is a variety of unquestionable value and one of the most important introductions of recent years.

According to my experience the Cottagers' Kale is the hardiest of all winter and spring vegetables, then follows Brussels Sprouts and the Dwarf Scotch Curled and Buda Kales. I am not at all surprised to learn that the Cabbage Broccoli selected by Mr. Gilbert, and I presume "fixed" by him, is a very hardy vegetable. According to the published descriptions of this supposed hybrid I think I have cut many dozens of them, and it is a remarkable fact, that I cannot possibly account for, that plants of this Cabbage-like Broccoli that I have often found come from certain stocks of seed is harder than the real heading Broccolis raised from the same packets. I have been annoyed more than once at the preponderance of these spurious Broccolis, and have complained to my seedsmen accordingly; yet I have found them useful, for I have known all the Broccolis proper killed, while these "rogues" have survived the rigours of the winter. In some of these Cabbage Broccolis small heads form, proving that they

are real Broccolis, but others form no Broccoli heads. If Mr. Gilbert has preserved a good stock of his Cabbage Broccoli, and it proves exceptionally hardy, he will deserve the thanks of the community, for the quality of this vegetable is beyond question.

Cottagers' Kale I have known to survive when every plant of Brussels Sprouts growing on the same square has been killed. The Kale in question I not only consider the hardiest of all, but it is better in quality than most, more productive than any, and, what is of great value, it continues in use as long, if not longer, than any other variety, thus preventing the blank that is so unpleasantly common between the Kale and Cabbage seasons. In this respect, too, I apprehend that the Cabbage Broccoli will be of service.

Brussels Sprouts are very hardy, and I know of no plan of growing them equal to sowing the seed where the plants are to remain the same as described by "W. W. B." on page 238. I have known plants so grown endure 36° of frost, or, as I presume is more correct, to survive the winter when the mercury of the thermometer has registered 4° below zero. Fortunately are those gardeners who have vacant ground at their disposal, enabling them to carry out that plan; and if they would grow Broccolis and Kales in the same manner they would find the advantage of the practice.

The Tall Scotch Kale is useful and fairly hardy, but it cannot survive what I may term zero winters. The Dwarf Treble-curved is more reliable in this respect, due, probably, to its flat leaves holding the snow, which often covers the plants and bed completely. Every plant in some rows of this sturdy Kale is now as fresh as before the winter, while the crop of the tall variety is quite destroyed. Buda Kale is alive. It is hardy, late, and useful. It is of a very dark—almost a bluish green colour, and is worthy of more extended culture for late spring use. Couve Tronchuda is a serviceable early winter vegetable of delicious quality after having been exposed to frost. It is much more hardy than many imagine, and should be grown in all gardens for affording a welcome change from and a succession to Savoys, than which it is much more hardy.

As was stated by Mr. Wright in his seasonable notes on Broccolis, thin sowing, firm ground, and exposure are important elements in preparing vegetables of this nature to resist the effects of an arctic winter.—A YORKSHIRE GARDENER.

CURRENT TOPICS—NOTES ON ROSES.

MR. F. BOYES (page 294) does not quite understand me when I say I do not think the frosts this year will have nearly done the same mischief as last year. I do not refer to standards. I think the opinion of most rosarians is gradually veering to my long-expressed statement that standards are not the proper stocks, or rather that budding Roses on the standard Dog Rose is not the best way of growing them. Standard Roses are more liable to destruction by frost and unsightly when bare of their flowers than dwarfs are. I quite agree with Mr. G. Duffield, Winchmore Hill, and Mr. Baker of Heavitree, that standards are not suitable to most gardens. Roses as dwarfs or on their own roots are much more easily protected from frost; winter mulching with good farmyard manure, and afterwards with straw or bracken slightly covered with soil, will both protect them and enrich the ground. I am sorry Mr. Boyes has had so many of his Roses injured. I am not surprised, however, that Tea Roses on the standards have suffered, but it must have been severe to have injured Cheshunt Hybrid, as that Rose in 1879 endured frost that quite killed Céline Forestier, America, and other varieties.

There is no reason why Rose beds should not be gay with other flowers. I plant Gladioli, Phloxes, Pentstemons, Geraniums, and other plants between the dwarfs, and if proper care is taken it does not interfere with the growth of the plants; and as Mr. Duffield says on page 300, even when standards are grown in circles many dwarf flowers may be planted, such as Nemophilas, Portulacas, Mesembryanthemums, especially the old favourite tricolor, and dwarf Ageratums, Phlox Drummondii, Collinsias, Saponarias, &c. I cannot agree with Mr. Taylor, page 251, that Rose cultivation is on the decrease; far from it, the demand made for newer Roses and upon nurserymen's stocks proves that the reverse is quite the case.

I will leave remarks on "D.'s" article on similarity of Roses till a future occasion. I am quite sure of one thing, that it is useful to discuss it, but that after long experience I am certain that very few persons are sufficiently accurate in their observa-

tions, and that many Roses supposed to be similar are distinct in many points that escape notice. Take for instance Duke of Wellington and Fisher Holmes, Black Prince and Pierre Notting, Princess Mary of Cambridge and Marguerite de St. Amand, Pierre Notting and Velours Pourpré, Reynolds Hole and Sultan of Zanzibar. No close observer could call them the same, and I am amused to find Marie Baumann and Alfred Colomb called identical; however, more on this point another time. Everything should be left to the discretion of qualified judges, and I only wish the number was greater.—C. P. P.

MARÉCHAL DE COUR PEAR.

THE week before last you gave a drawing and description of this Pear. I believe I have it under the name of Conseiller de la Cour. My experience of it as a pyramid Pear has been rather unfortunate. The fruit is good and the tree vigorous, but I cannot get it to bear. I tried root-pruning without much effect, then had the tree dug up and replanted. It was getting rather large, and a dry season coming the following year it had a hard struggle for existence, and only threw out a few leaves. In the following year it had a few blossoms, but directly after they were set they all dropped off in consequence of the tree not having quite recovered the previous replanting. The third season there was a good show of bloom, but it was all cut off by the frost, which was rather severe that spring. Since then it has borne indifferently, and is running too much to wood, and this at a time when the trees of Emile d'Heyst, a good Pear coming in about the same time, bear so abundantly that they have to be propped year after year to carry the weight of fruit. Unless others are more successful with this Pear than I have been I do not wonder at its not being very much grown. I shall try the effect of root-pruning next season, first on one side, and in the following on the other, and if the result is no better shall give it up as a hopeless case.—AMATEUR, Cirencester.

[Few if any of the fine pyramid Pear trees in the Royal Horticultural Society's Gardens at Chiswick are flowering so freely this year as those of Maréchal de Cour.—EDS.]

SHADING CAMELLIAS.

ABOUT this time of the year it is common for writers in horticultural papers to advise shading Camellias to facilitate their growth and preserve them in a healthy state. This may do good in some cases, but I can certify that not shading them will do no harm in others. In fact I am strongly inclined to think that shading does more harm than good, and that it would be a decided advantage never to shade Camellias.

There are some very good Camellia bushes in the conservatory here. Some of them grow so much annually that the points of the shoots reach the roof, and have to be cut away every spring. These plants are not shaded at any time, and they always grow and bloom most satisfactorily. I have sent you a handful of young shoots to show what growth they have made now, and although they look rather tender, yet they have been growing under all the sunshine we have had since they began to form. Plenty of water at the roots, and ventilation when necessary, make all the sunshine we have here powerless to do them harm. To shade them now would very likely result in burnt foliage or stunted growth when the shading was removed; besides, the wood would not ripen well enough to produce good blooms in winter were they grown in the shade.

Those who grow their Camellias in vineries and similar places may retain them there under the shade of the Vines, but according to my experience it is useless to shift Camellias into a shady place to make their growth.—J. MUIR.

[The growth is unusually luxuriant, and of a rich healthy green colour without speck or blotch.—EDS.]

TUBER-STEMMED POTATOES.

DURING the last few years in the north of Auckland district of New Zealand tubers grow on the stems of Potatoes in the axil of every leaf. The stems die, but the tubers remain attached and vegetate from every eye; they are of a blackish green colour, merely I presume from exposure to the light. The tubers underground are small and worthless. This has been a very wet season, but the last was a very dry one, and in both the crops suffered. The result is the same with New Zealand

or Tasmanian seed. The crops are not attacked throughout, but plants here and there.

Mr. Bentley in his "Manual of Botany" mentions (page 11) that a case was reported in the *Gardeners' Chronicle*, and the figure given exactly illustrates the disease as it appears here, for disease it must be considered which causes abnormal growth to an extent which is becoming serious. Is there any known cause? The prevailing soils in this district are clay and volcanic.—McQ., *Captain*.

[Isolated instances of tubers forming on the stems are not unfrequently met with in the English counties, and in these cases the root tubers are inferior in size. In these instances we attribute the change to some check the plants have received in their growth, but a majority of the plants constantly producing stem tubers we should regard as a symptom of degeneration of the variety.—Eds.]

ORIGIN OF PYRETHRUM GOLDEN FEATHER.

In reply to "R. J. W.," who requests information concerning the origin of this useful bedding plant, we are enabled by the courtesy of Messrs. Henderson & Sons of Maida Vale to give the following particulars:—It is regarded as a seedling variety of *Pyrethrum parthenifolium*, and originated in a cottager's garden at Ipswich. The occupier's attention was attracted by the bright yellow foliage, and thinking it might be of some value be communicated with the firm mentioned above, who obtained it from him. It was not much valued at first, as it was considered likely to revert to the ordinary green form, but it received much more attention after Messrs. Henderson were awarded a first-class certificate for it by the Royal Horticultural Society in August, 1867. In the autumn catalogue of that firm for the above year plants were offered at from 1s. to 3s. 6d. each. Then, too, it was only propagated by cuttings, as few thought it would come true from seed. Now Golden Feather is one of the most common and most useful bedding plants in cultivation.

SEA SAND.

SOME few years ago I had great difficulty in obtaining good silicious sand for cuttings and other purposes, giving a great price for it, and having to strike some thousands of cuttings annually made the process rather expensive; however, as I lived within half a mile of the seashore I tried sea sand. Some of it was not, however, sufficiently good, so I sent for another load further up the river, and this was all that could be desired.

I have frequently employed sea sand for Hyacinths and Tulips out of doors, and they do surprisingly well in it. I have also sown Onions in sea sand fresh from the shore, and very clear and sound they turned out.

Every two years I make up a pit, the walls of which are composed of sods from a marsh which the high tides cover perhaps twice a week. At the end of two years these sods make an excellent compost for Cinerarias, Calceolarias, and many other plants.—J. B. BOSTOCK.

[Mr. Cannell of Swanley employs sea sand largely and successfully, and he states that when washed it is deprived of a valuable manurial property.—Eds.]

THE AURICULA EXHIBITION.

THE very copious notes given by your reporter of this most interesting Exhibition almost render unnecessary any remarks from myself. In truth I find myself in the position of a speaker at a public meeting who, having prepared his notes and interesting facts, stands suddenly aghast when someone who has been asked to say a few words takes the words out of his mouth, gobbles up his facts, until before he is called upon to speak he finds himself left with the very dry bones of all that he had intended to delight his audience with. As, however, a very old grower and exhibitor of the flower, my impressions of it may not be without their interest.

As a whole the blooms were without question far inferior to those which I have seen in former years. Two causes contributed to this. One was, that owing to the character of the season many of the best flowers of the southern growers were past their best; and a long acquaintance with the flower has led me to this conclusion, that a severe winter produces an early bloom. During such a one as we have passed through the plants had a perfect rest. For many weeks not a drop of water was needed, and hence when under the influence of the

most genial spring we have had for many years the stored-up strength was soon set going, and rapid and continuous growth was the result. The other was, that whether from high stimulating or sudden changes of temperature, the flowers that were exhibited showed a roughness and coarseness that was very distressing to a genuine lover of a flower whose greatest charm is its complete and thorough refinement. There was not, for example, a thoroughly good bloom of either Lancashire Hero or George Lightbody in the Show; and the premier prize for the best Auricula in the Exhibition went to that very old flower Page's Champion, that which most seriously entered into competition with it being a new seedling self of Mr. Horner's. There were some flowers, moreover, which were so coarse and so out of character that it was almost impossible to believe them to be those they represented. I have before my eyes a bloom of Campbell's Admiral Napier, a flower which when well done is a fine green edge, but which as exhibited by one of our best growers had nearly every bad quality an Auricula could have. The paste was angular, the body colour heavy and running into the edge, and the whole flower rough. Inasmuch as this coarseness pervaded all the collections, whether from the north or south, it must, I think, have been mainly occasioned by some peculiarities of the season.

One of the most interesting portions of the Exhibition was the competition for seedlings, and many promising flowers were exhibited. The very finest exhibited by Mr. Horner (Heroine) was a remarkably good flower. "What fault," said a very experienced and clever grower to me, "can you find with that flower?" I confessed that I could not see any. "Well," he said, "I see one; there is shading in the colour." A closer examination showed that there was a slight difference in the colour, but as the flower was fully expanded this may have been occasioned by the fact that it was a little past; but the eye was good, the paste solid, the colour a rich brownish crimson, and the whole flower perfectly flat. Another very promising flower in a class which is by no means rich was Douglas's Conservative. Both tube and paste were excellent; the white edge hardly as white as it ought to be, certainly not so white as Catharina or Glory; the body colour is slightly inclined to run into the edge, but this may be merely the effect of the season. Horner's Orion is a good green edge, somewhat in the style of Trail's Anna, but weak in the tube, a defect which a great many of our newer flowers seem to have. Another good white-edged flower was Simonite's Mrs. Dodwell; the body colour, however, not that which pleases the northern taste, being purplish blue instead of black. A pretty and neat flower on a very small plant obtained a prize as a seedling, exhibited by Mr. R. Dean. It was not raised by him, but picked up at Market Rasen under the name of Smith's Rob Roy. The paste was good and the edge clear green, but whether it will have sufficient size will be a question. The other seedlings were noticed in last week's Journal, and I have nothing to add.

It will be seen that again the chief honours of the Show were carried off by the northern growers. Three growers in what we may call the metropolitan district, two of them growers for sale, entered the lists—Messrs. Turner, Dean, and Douglas. The purely northern growers were Messrs. Horner, Mellor, Simonite, Barlow, Pohlman; and Mr. Llewelyn came up strong from Wales, and Mr. Fellowes won his spurs from Cambridgeshire. He has only just entered on his growth, and the success which has attended his efforts may well encourage him to go further. It will thus be seen that, notwithstanding the efforts made to popularise the Auricula in the south, it is to the north that even the southern section of the National Auricula Society must look for support. The northern growers have thus a double advantage—they can come down south and sweep away the chief prizes, and have the coast all to themselves at their own exhibition, for none of our southerners can go up there, as their flowers are always over at the time that the Manchester Exhibition is held, which this year will be on the 27th.

One advantage derived from the character of the season was that as little or no heat had been necessary to bring on the plants, they had not that drawn and lanky appearance which they sometimes have; and I was glad to find that the application of heat was more and more deprecated, and its use mentioned in a deprecatory way as a disagreeable necessity. I am sure that it is a fallacy to say flowers will not open flat without it. I have had blooms this year of those varieties which are said to require it as flat as anyone need desire, and my statement in the Journal lately that it was rather a necessity of the exhibitor than of the grower is correct. Some plants

showed that cabbagey appearance which Mr. Horner had justly deprecated in a contemporary; but as a rule it was not nearly so manifest as in former years, and I sincerely hope that the old standard of plants which Glenry and the older florists commended will more and more find favour with the new generation. Refinement, neatness, and purity are high qualifications, and they constitute those of a really good Auricula.

We have to thank those gentlemen who have so vigorously worked up the southern section for their efforts in endeavouring to popularise a flower which is so worthy of a florist's love; and although only partially successful as far as the south is concerned they have afforded a rich treat to all lovers of the Auricula, not only in bringing together so numerous a collection of flowers, but also of enabling Auricula growers to meet together and chat over their common favourite. It is one of the most enjoyable features of the Show, and it is only to be regretted that something better cannot be done in the way of bringing them together in a social gathering, but the reasons given by the Honorary Secretaries in a contemporary are cogent enough. Perhaps before another year some more agreeable plan may be suggested and carried out.—D., Deal.

ON page 313 in your valuable report of the Auricula Society's Show on the 19th inst., you say, "The prize for the premier Auricula in the Show was awarded to Mr. Horner for a small plant with six flowers of Page's Champion, a decision which did not meet with the unanimous approval of exhibitors and fanciers." Will you kindly allow me as one of the Judges, and the one mainly responsible for this award, to offer a word of explanation? I may begin by saying that I never thought it could have been so difficult, out of so great a number of plants, to pick out even one of manifestly surpassing excellence. Owing, no doubt, to the cold easterly wind prevailing when they were coming into bloom, almost every plant was rough and wanting in refinement and finish. However, Mr. Horner's Page's Champion seemed to us at the time of judging to come nearer to the standard of perfection than any other. But on my return to the Show after luncheon, I was amazed at the change that had come over it—one pip had fallen, and two had turned yellow. No doubt in its *then condition* it presented a strange spectacle as the premier Auricula. Some plants had palpably improved, opened, flattened, and smoothed, in consequence of the heat of the place of exhibition; but the same heat was ruin to Champion, though it might have remained in good condition a day or two longer in a cool atmosphere. Hence his collapse, and the not at all unnatural dissatisfaction mentioned in your report. Of course the Judges have only to do with a plant as it appears at the time of adjudication. We had no hesitation in selecting Champion for the premiership, not foreseeing his speedy downfall.—FREDERICK TYMONS, Co. Dublin.

ROYAL HORTICULTURAL SOCIETY.

APRIL 27TH.

THE prevailing cold winds prevented this meeting being very largely attended by exhibitors, nevertheless the collections of plants were sufficiently numerous to occupy one side of the conservatory, and a few were staged in the Council-room. The chief features were the superb group of Orchids from Sir Trevor Lawrence's garden, the Roses from Messrs. Paul of Cheshunt, and the group from Messrs. Veitch of Chelsea.

FRUIT COMMITTEE.—John Lee, Esq., in the chair. The duties of the Committee were extremely light, for there were only three exhibits. Mr. Ernst Benary, Erfurt, Germany, sent two dishes of Onions named Zittau Giant Yellow, for which a commendation was awarded as a good-keeping variety. Mr. G. T. Miles, gardener to Lord Carington, Wycombe Abbey, Bucks, sent bunches of Black Hamburg Grapes extremely well coloured, and a basket of Stanstead Winter Cabbage Lettices in excellent condition, a cultural commendation being awarded for both.

FLORAL COMMITTEE.—Dr. Denny in the chair. In the conservatory was a grand collection of Orchids from Sir J. Trevor Lawrence, Bart., M.P., Burford Lodge, Dorking, which for vigour, floriferousness, and brightness of colour could not be surpassed. The following are some of the most noticeable specimens:—*Dendrobium Jamesianum* on a block had two growths bearing from three to eight large flowers each; *Madevalla Harryana* with over three dozen large and extremely brightly coloured flowers; *Dendrobium thyrsiflorum* bore numerous enormous pendulous spikes; *Gnecidium sarcoodes* with a panicle of flowers over a yard in length; *Lycaste Skinneri*, a handsome specimen such as is seldom seen, with nearly forty large blossoms; *Oncidium amplatum majus* had several large panicles bearing an immense

number of large pale yellow flowers; *Leelia cinnabarina* had four racemes of bright orange-coloured flowers; *Odontoglossum citrosum* and *O. citrosum roseum* were represented by good specimens, one form of the latter had four fine racemes of flowers, the labellums being very deeply tinged with rose; *Cattleya Mendellii* had two enormous blooms; *Cypripedium caudatum*, handsome flowers with petals more than 2 feet in length. *Odontoglossum crispum* and a superb variety aptly named *grandiflorum* were exhibited in fine condition, also *O. Andersonianum* and *Cattleya Mossiae* with many others in extraordinary good form. Mr. J. O. Spyers, Sir Trevor Lawrence's Orchid grower, most indubitably understands the requirements of the beautiful plants under his charge. The award of a gold medal indicated the Committee's recognition of their great merit.

Messrs. Veitch & Sons, Chelsea, exhibited a large group of Roses in pots, and numerous beautiful Japanese Acers. Among the Roses some of the best varieties represented were Charles Rosillard, Madame Willmarms, Comtesse de Serenye, Vicomte Vigier, Beauty of Waltham, and Fisher Holmes. The Acers included several forms of *A. polymorphum*, notably *flavescens* and *palmatifidum*. A gold medal was awarded. Six boxes of cut Roses were exhibited by Mr. W. Paul of Waltham Cross, comprising over 120 good blooms of the best varieties. The following were especially remarkable for their size, substance, and brightness of colour:—*Mlle. Thérèse Levet*, *Capitaine Christy*, *Red Dragon*, a new variety, extremely bright; *Queen Eleanor* very handsome flowers; *Souvenir d'un Ami*, *André Dunard*, *Star of Waltham*, and a very dark-coloured seedling of great size. A silver Flora medal was awarded. Messrs. Paul & Son, The Old Nurseries, Cheshunt, obtained a gold medal for a large group of handsome Roses in pots, *La France*, *Madame Victor Verdier*, and *Marquise de Castellane* being represented by remarkably handsome well-flowered specimens. Cut blooms of *Maréchal Niel* were also shown in fine condition. Messrs. Osborn & Son, Fulham, were adjudged a silver Banksian medal for a group of plants comprising *Palma*, *Draconas*, *Azaleas*, and several good specimens of *Anthurium Schottianum*. Messrs. Charles Lee & Son, Hammersmith, sent two pans of *Tuberous Begonias*, *B. Coltoni* and *B. Bodwelli*, both bearing large and brilliantly coloured flowers. For the latter a bronze medal was awarded. From the Society's gardens came a collection of *Primulas* and *Selaginellas* in excellent condition; and Mr. J. Aldous, South Kensington, staged a group of miscellaneous plants, for which a silver Banksian medal was awarded. Messrs. Barr and Sugden had their usual group of *Marcianuses* and *Tulips*.

In the Council-room were staged several new plants, some being extremely attractive. Messrs. Veitch & Sons obtained first-class certificates for the following:—*Lastrea Richardsii* multifida, a pretty Fern with pinnate fronds, the pinnae crested and light green; *Amaryllis Lady Bolsover*, a handsome variety, flowers large, 7 or 8 inches in diameter, of good form, streaked with scarlet, a broad white band down the centre of each permits division; and *Azalea Rollissonii*, a dwarf form with small neatly formed bright salmon-coloured flowers, very distinct and attractive. Other good *Azaleas* were shown, notably *Boi Leopoldi alba* and *A. hydrangeiflora*, the latter resembling the *Carmichael* hybrid. Mr. J. Cloke, gardener to J. A. Jinne, Esq., Bearley, Liverpool, sent three new pretty *Crotons*, well coloured but not deemed sufficiently distinct to merit certificates. Mr. W. Bull, Chelsea, several specimens of *Maranta Kerchoveana*, *Sarracenia flava picta*, *Acacia sphaerocephala*, and *Drosera filiformis*; for the latter a cultural commendation was awarded. Mr. J. King, gardener to G. Simpson, Esq., Wray Park, Reigate, obtained a first-class certificate for *Coleus George Simpson*, a handsome variety with leaves of good form, extremely bright crimson blotched with maroon, and with a neat crenated yellow margin—very distinct and attractive: one of the few new *Coleuses* which have been considered worthy of certificates. Sir Trevor Lawrence obtained a first-class certificate for *Odontoglossum hystrix serratum* with large yellow flowers blotched with pale chocolate, petals fringed on the edges—a beautiful Orchid. A cultural commendation was awarded for specimens of *Mignonette* from Chiswick named Hensley's Giant White, an excellent form and well grown. Messrs. John Standish & Co., Royal Nurseries, Ascot, were adjudged a first-class certificate for a beautiful seedling *Rhododendron* named *Snowflake* as a forced plant, flowers pure white, open, 8 or 4 inches in diameter, in large compact heads; also a second-class certificate for *Rhododendron Flag of Truce*, similar to the other, but bearing smaller flowers. Votes of thanks were accorded to Mr. Hooper, Widecombe Hill, Bath, for a collection of remarkably handsome Pansies; and to Mr. Caudwell for specimens of *Cardamine pratensis*. Mr. J. Elwes, Preston House, Cirencester, obtained a first-class certificate for *Corydalis bracteata*, a hardy plant with pale yellow flowers and bright green leaves.

NOTES AND GLEANINGS.

AT a General Meeting of the ROYAL HORTICULTURAL SOCIETY held on Tuesday last, Sir Trevor Lawrence, Bart., M.P., in the Chair, the following Candidates were elected Fellows of the Society:—Chas. Abercrombie, Sir William N.

Abdy, Bart., Edward Alexander, Miss Mary A. B. Anderson, Mrs. Armstrong, Vincent Bailey, Algernon Bathurst, Edward K. Bridger, Mrs. Heaketh Case, Henry Casson, F. S. Chapman, C. J. Dance, Sir Douglas Forsyth, A. Cecil Gibson, Robert H. Hamilton, James Nord, W. J. Martin, Mrs. Maxwell, Mrs. Petrie, George H. Mildmay Ricketts, O.B.; Chas. Silverlock, Chas. J. Wade, Edward Woods. Dr. Masters, F.R.S., offered some remarks on the flowers exhibited, and alluded in feeling terms to the death of Mr. Robert Fortune, oriental traveller, botanist, and author.

— IN former years PLANTS WERE DISTRIBUTED BY BALLOT to the Fellows of the Royal Horticultural Society, but on investigation the Council found the result was not satisfactory, as rare and valuable plants frequently fell into the hands of those who had not the proper appliances for their cultivation. After full consideration the Council have determined, instead of balloting for plants as hitherto, to allow Fellows to select for themselves any which they may desire to cultivate, and which, being the legitimate property of the Society, the Council are enabled to distribute. A list of plants at present has been published and can be obtained through the Secretary at the Society's offices at South Kensington. Where it is not possible to supply a specimen immediately, the Superintendent will do his best to propagate one without delay.

— "It is wonderful," says "R. P. B.," "how much may be done for the IMPROVEMENT OF BADLY MANAGED GRAPE VINES by a very simple means. No more shoots should be laid in than there is room for the foliage to develop freely. It is safer to err on the side of giving too much space to the foliage if that were possible. One season's thin training will tell materially on the crop of the succeeding year. Now is the time to see that no overcrowding is allowed."

— IN the stove at Calderstone several plants of *DENDROBIUM NOBILE* are blooming well considering the bad season for ripening the growths, Mr. Tunnington being a most successful cultivator of this *Dendrobium*. *D. Bensons*, *D. crassinode*, *Cypripedium Boxalli*, the lovely *C. hirsutissimum*, *Oncidium sphacelatum*, and *Phalsenopsis amabilis*, are also flowering freely and produce a cheerful display. *Anthurium Schertzerianum* is also very fine.

— AT the second spring Show of the ROYAL BOTANIC SOCIETY on the 21st inst., a large number of new plants were exhibited, of which about two dozen were honoured with first-class certificates. They were awarded to the following exhibitors:—To Messrs. Veitch for *Cypripedium marmorophyllum*, a hybrid between *C. Hooker* and *C. barbatum*, clearly intermediate in character, the foliage being beautifully marbled, the flowers of medium size, labellums dark bronze, petals a lighter colour tinged with rose, and the posterior sepal striped; and for *Polystichum tripterum*, a species from Japan, with light green pinnate fronds. To Mr. Bull for *Drosera filiformis*, a pretty Sundew, with filiform leaves thickly clothed with reddish glandular hairs; *Tillandsia muscica*, very distinct, the leaves dark green on the upper surface, peculiarly marked, and the under surface purple; *Rhododendron assamicum*, a form of slender habit, with narrow elliptical leaves, white bell-shaped fragrant flowers borne in loose heads; *Juncus zebrinus*, the Zebra-marked Reed, with alternate bands of white and green; *Masdevallia Wallisi*, a peculiar species with hairy sepals, and spotted with reddish chocolate, the attenuated parts of the sepals about 3 inches in length; *Sarracenia flava picta*, pitchers 18 inches to 2 feet high, light green, lid broad and marked with a few reddish veins; *Acacia sphaerocephala*, a species with dark shining green bipinnate leaves, from the axils of which arise two long reddish brown spines; and *Maranta Kerchoveana*, somewhat resembling *M. Massangeana*, with small oval bright green leaves, marked with parallel dark patches between the veins. To Mr. B. S. Williams for *Adiantum Bausei*, previously described; *Adiantum mundulum*, a dwarf neat form of *A. cuneatum*, very pretty; and *Choisya ternata*, described on page 294. To the General Horticultural Company for *Dracena aurantiaca*, leaves narrow, streaked with orange, red, and green, very elegant; *D. Ernesti*, leaves narrow, centre very dark, margin rich crimson; *D. Thompsoni*, leaves broad and recurved green centre, crimson margin, handsome and effective; *Adiantum Bausei*; *Croton Baronne de Rothschild*, large elliptical green leaves, veined with gold and red; and *Tillandsia tessellata*, a fine specimen of this handsome plant, with large leaves tessellated with green and white. To Messrs. Low and Co. for *Odontoglossum Roezli superbum*, an extremely beautiful variety with enormous flowers, petals blotched with

rich purplish crimson near the base, and the labellum, which is about 3 inches across, stained with yellow at the lower portion.

— AT the same Exhibition FLORAL CERTIFICATES were awarded to Mr. B. S. Williams for *Amaryllis* Mrs. Burroughs, flower of medium size, divisions reflexed, streaked with crimson scarlet, and margined with white, very striking; to H. Little, Esq., for *Amaryllis* Princess Dagmar, flower of good form, about 5 inches across, very symmetrical, divisions broad, rich crimson scarlet, streaked with white near the base, each scape bearing four flowers; to Mr. Howard, Southgate, for *Chrysanthemum frutescens* Etoile d'Or, described on page 295; and to Mr. Turner, Slough, for an Alpine *Auricula* named Mrs. Ball, large symmetrical pipe, shaded purplish crimson, with bright yellow eye.

— "A NEW FELLOW OF THE ROYAL HORTICULTURAL SOCIETY" observes in reference to the plants provided for distribution:—"I am offered a list of plants from which I as a four-guinea Fellow can choose thirty. Here at once is nearly, or quite, or possibly even more than the value of my money, and in addition I have my privileges of admission to the shows, voting, &c. A society having such high objects in view as promoting scientific and practical horticulture, and offering such inducements to its supporters—showing, indeed, in a practical manner its earnestness in the work in hand, deserves a wide recognition and a very large measure of public support. I shall endeavour to induce my friends to join the Society, so as to strengthen it and enable it to better carry out its excellent mission."

— WE have received a bouquet of *TEA ROSES* from the Hon. and Rev. J. T. Boscawen, grown by him in his garden at Lamorran, that are quite worthy of the reputation of a Vice-President of the National Rose Society. The blooms are large, full, and fresh—the finest we have seen this year from any private garden, and equal to many that are staged by the leading cultivators in their exhibition stands at the summer shows.

— WE learn with great pleasure that Mr. W. H. FITCH, F.L.S., so well known as an admirable delineator of plants, has been awarded a pension of £100 out of the Civil List for the services he has rendered to botany.

— WE are informed that there has been an unusual DESTRUCTION OF EVERGREENS in the locality of Gravesend, the result, as gardeners seem to think, not so much of the actually low temperature last winter, but caused by two rime frosts, when shrubs and trees were loaded with ice crystals all day. Near London our correspondent noticed the effects were less marked, and suggests that possibly there the warmth of the metropolis melted off these deposits of ice in the course of an hour or two.

— A KENT correspondent, referring to *HYACINTHS* being generally unsatisfactory this season, states that a neighbour of his, Mr. J. F. Cole, the Tower House, Bexley Heath, has bloomed a *Hyacinth*, *M. de Foesch*, with 190 perfect bells on a single stem. The same gentleman had several others unusually fine this season, though many people have complained of their *Hyacinth* spikes being very poor.

— BY a clerical error on page 314 Mr. McIntosh was described as "President" of the PELARGONIUM SOCIETY. This gentleman reminds us that he was Chairman of the Society last year, when he retired, the present Chairman being Mr. E. B. Foster of Clewer Manor, Windsor.

— THE usual monthly meeting of THE METEOROLOGICAL SOCIETY was held on the 21st inst. at the Institution of Civil Engineers, Mr. G. J. Symons, F.R.S., President, in the chair. Rev. J. O. Bevan, M.A., F. E. Cobb, E. Filliter, F.G.S., T. L. Gentles, W. A. Harrison, F.R.G.S., J. W. Peggs, F. Slade, and E. J. C. Smith, were balloted for and duly elected Fellows of the Society. The discussion on Mr. Ellis's paper on the Greenwich Sunshine Records, 1876-80, was resumed and concluded. The following papers were read:—On the Rate at which Barometric changes Traverse the British Isles, by G. W. Whipple, B.Sc., F.R.A.S., F.M.S. A New Form of Six's self-registering Thermometer, by J. W. Zambra, F.M.S.

— FEW greenhouse plants are more elegant than *BOSSLEA LINOPHYLLA*. Its gracefully pendulous habit, and brilliantly coloured flowers of yellow and crimson, combine to make it no less than an essential to every moderate collection. But for the superior grace of its contour we might mention the well-known *Eutaxia myrtifolia* as equal to taking its place, but we much prefer the long flowing branches of the one to the stiffly erect habit of the other. It is a native of New Holland, and with the care proper to choice greenhouse plants is very easily

cultivated. The occasion of our note is a plant flowering in the Cambridge Botanic Garden.

— AN OPEN COMPETITION for the situation of Junior Second Assistant in the Herbarium, Royal Gardens, Kew, in the Department of Her Majesty's Works, &c., will be held in London on Tuesday the 25th May, 1880, and following days; the salary of such Assistant being £100 per annum, rising by annual increments of £10 to £150 per annum. No person will be admitted to the examination from whom the Secretary of the Civil Service Commission has not received, on or before the 15th May, an application on the prescribed form, of which a copy can be obtained, with all necessary instructions, from the Secretary, Civil Service Commission, London, S.W.

ABELIA UNIFLORA.

"J. B. W." asks if this is a hardy shrub, and for a description of its flowers. Our reply is that it grows and flowers freely against a wall in the south of England, but we have not had experience of it in the north. It is one of the many introductions of the late Mr. Fortune, and is fairly represented in the annexed figure.



Fig. 47.—*Abelia uniflora*.

It is an evergreen shrub of somewhat slender habit, the branches partially decumbent. The leaves are broadly lance-shaped, pointed, dark green on the upper surface, but pale beneath. The flowers are produced from the axils of the leaves, and, as already stated, vary in number from one to three on each peduncle. The corolla externally is white tinged with pale purple, with a yellowish throat, and resembles some of the *Pentstemons* in form.

It is, however, a member of the Honeysuckle family (*Caprifoliaceæ*), in which small order it is closely associated with the handsome *Diervillas*, now so common in gardens, and better known under their early name of *Weigela*.

The flowers are freely produced during July, and are admirably fitted for cutting, as they are clustered near the upper portion of the branches. Any ordinary garden soil suits the plant very well, and it may be easily increased by cuttings.

SOWING PEAS.—Those Peas that are to be staked may with advantage be sown now in trenches prepared as for Celery, with this difference, the greater part of the soil being worked back into the trenches previously to sowing. Of the dwarf varieties to be grown with or without stakes, Dr. McLean, Carters' Challenger, Fillbasket, and McLean's and James' Prolific are all suitable for present sowing, giving the pre-

ference to the former, and sowing at the same time a row of either Yorkshire Hero or Veitch's Perfection. Of tall Peas Champion of England, and either Culverwell's Prolific or the Emperor of the Marrows, are suitable.—W. IGGULDEN.

THE ORIGIN OF THE POLYANTHUS.

The discussions on this question have generally tended to show that the garden varieties of *Primula* commonly called Polyanthus may be produced from either the Cowslip or the Primrose, or from hybrids between them. When Mr. Boyes says that the Cowslip and the Primrose are quite distinct species he probably knows that many eminent botanists have held a different opinion. Linnæus believed that the Primrose, the Oxlip, and the Cowslip are different forms of the same flower, and he is followed by many modern botanists, and by Mr. Bentham, who, in his "Handbook of the British Flora," includes all three forms under the name of *Primula veris*, and gives his reasons for it. The various hybrid forms which, as Mr. Boyes says, may be often found together connecting by almost imperceptible steps the Cowslip and the Primrose, are generally barren, but there is an Oxlip found wild in the eastern counties which is reproduced without any variation from its own seed. This is called by Jacquin *Primula elatior*, and is included by Mr. Bentham under *Primula veris*. I have introduced this variety in my garden in Cheshire, where it grows plentifully from seed, but is not so ornamental as the common Oxlip. I have been told by Devonshire gardeners that when Cowslips are introduced into that county they soon turn to Primroses! This is hard to believe, but it is generally believed in Devonshire.

The seedlings of the common wild Primrose when produced in a garden show a ready disposition to sport both in form and colour, becoming dull red and dull pink, and producing several flowers on a stalk. A large-flowered red Polyanthus common in old gardens is, I believe, only two or three generations removed from the common Primrose. There are also many established varieties of the garden Primrose which often run into the Polyanthus habit and produce trusses, especially a dark purple double variety, which flowers in trusses as often as singly.

I grow thousands of garden Primroses and Polyanthus from bought packets of mixed seeds. They produce flowers varying in size from that of a large wild Primrose to a common Cowslip, and it is hard to draw a line between the Cowslips, the Primroses, and the Polyanthus amongst them.

As regards the division of the flowers into thrum-eyed and pin-eyed, Sir J. Lubbock tells us that it is an arrangement for preventing the fertilisation by insects of different flowers on the same plant by their own pollen. In collecting the honey the upper part of the insect's proboscis is pressed against the anthers of the thrum-eyed flowers and the lower part against the anthers of the pin-eyed. These two parts of the proboscis, which become charged with the pollen of each class of flower, correspond with the length of the pistil in the other class, so that the thrum-eyed flowers are all fertilised from pin-eyed flowers, and the pin-eyed flowers from thrum-eyed.—C. W. DOD.

EXTRACTION OF TREE ROOTS BY DYNAMITE

AT MENTMORE, THE SEAT OF THE EARL AND COUNTESS OF ROSEBURY.

DYNAMITE is the invention of Mr. Alfred Nobel, a Swiss mining engineer, and has been before the public for the last ten or twelve years, and for the past few years has been brought into requisition for many purposes where other explosives would have been of little use. Amongst them may be named the blowing-up of Hell Gate in New York Harbour, the smashing-up of the "Vanguard," and lately at the scene of the late lamentable accident at the Tay Bridge, it has been used for breaking the massive girders under water. It is not necessary for me to reiterate the many uses to which it has been put. My present object is to give a few practical details respecting the use of it in removing tree roots out of the ground. In the park here our usual method was blasting them with powder or grubbing them up; but this we found a slow, tedious, and expensive process, consequently we were determined to try the more expeditious mode of removing them by dynamite. For the information of those who have not seen this ingredient it may be interesting to note a few particulars. Dynamite is composed of 75 per cent. of pure nitro-glycerine and 25 per cent. of a porous earth called Kieselghur, which is procured

from the bottom of the German rivers. This earth is ground and prepared finer if possible than the best biscuit flour, and when looked at through a powerful microscope every grain is porous, or, in other words, honeycombed, so that each grain soaks up and retains its share of nitro-glycerine when mixed. The above proportions are just sufficient to make the dynamite plastic or pasty without allowing the liquid nitro-glycerine to exude. In appearance it is of a reddish colour, and is made up into cartridges of different sizes, varying from 1 inch to 2 inches in diameter and 4 inches long.

In the park here we have recently been felling trees for the purpose of doing away with the hedgerows and crowded appearance of this part of the estate, to improve the landscape and allow the trees which are left to fully develop themselves. Owing to most of the trees having grown in hedgerows they have formed much stronger roots than if they had been grown in a wood, therefore more labour and explosive were required to take them out of the ground. The tools or implements required are of simple description—viz., earth augur, which is similar to an old-fashioned wood augur, 2 inches in diameter at the bit end, about 4 feet long, and fitted with a slightly hollowed shield or cap, which the man fits against his chest when boring—this is used for boring holes between the fangs; a crowbar, grafting, and stock axe. These are all the implements that are required. The operation is as follows:—Suppose a large root is to be removed out of the ground, a hole is made with the earth augur between two of the strongest fangs; this is put in at an angle so that the bottom of the hole is as near under the centre of the root as is possible; the hole is then charged with a few cartridges of dynamite according to the size and strength of the root. A primer cartridge containing cap and fuse is then inserted on the top of the charge, and the whole rammed down with loose earth by a wooden rammer. The end of the fuse is then lighted; this explodes the cap, and that in its turn the dynamite, and the whole mass is usually blown out, breaking up the root into convenient pieces for loading up or burning. The fuse is cut off at sufficient length so as to allow the workmen to get out of danger, which is usually from 50 to 100 yards, according to the strength of the charge. After the charge has exploded seldom anything remains but a large hole much resembling the bed of a boiler. I took particular notice that no damage whatever was done to the surrounding trees. We had nearly four hundred roots blown out by this process; and with two of our common labouring men, with one man sent by the agents representing the Dynamite Company, Messrs. Johnson & Co., Dudley, we have been able to remove from twenty-five to thirty per day of roots averaging from 1 foot 6 inches to 4 feet 6 inches in diameter. I find from careful calculations made that we have been enabled to remove the roots in a far more expeditious manner than hitherto at from 50 to 60 per cent. less cost. No one need be prevented using dynamite on the score of its being dangerous, for with ordinary care it is in my opinion as safe to use as gunpowder. I can with confidence recommend it for that purpose.—J. SMITH, *Mentmore, Bucks.*

MIGNONETTE AND ORCHIDS AT WILTON HOUSE

IN one of the houses at the gardens of H. J. Buchan, Esq., Wilton House, Southampton, are some fine examples of Miles's Mignonette. The plants are in 24-size pots, and are producing from twenty to twenty-four of the largest spikes of bloom I have ever seen, from 7 to 9 inches in length and of proportionate substance. The seed was sown in 60-sized pots last June, and the young plants were shifted on as required, the compost employed being a mixture of loam, leaf soil, and decayed manure. After the final potting a little weak liquid manure was occasionally given; but Mr. Osborn, the gardener, attributes the fine growth in a great measure to top-dressings of short decayed manure, and for which room was left when the plants were potted.

In the Orchid house there are from three to four dozen plants in bloom, comprising *Cypripediums*, *Maxillarias*, *Odonoglossums*, *Lycastes*, and *Oncidium*, *Oncidium Marshallianum* having two spikes bearing 140 flowers. Mr. Buchan is well known for his love of Orchids, and is constantly adding to his already large collection.

In the other houses and pits are good crops of Grapes, Melons, and Strawberries. Outside the flower beds are exceedingly gay with spring flowers. The kitchen garden crops are looking well, the whole presenting an air of neatness and

good management that reflects great credit on employer and employed.—J. A., *Nelley.*

BULLFINCHES AND THEIR FOOD.

THE depredations of bullfinches are, so far as my experience goes, confined to a few months in late winter and early spring, but in justice to him let us see what he is doing the remainder of the year. "WILTSHIRE RECTOR" says, on page 293, that "Mr. Harrison Weir's article on this subject at page 266 ought to settle this matter for ever." So far as being an insectivorous bird I believe it to be perfectly true. I have repeatedly given various insects to caged bullfinches, but although they are fond of Gooseberry buds they will not touch any insect food; and as to the idea of picking only such buds as contain insect food in some state the idea is absurd, as every practical gardener knows to his cost. But cannot we do better than shoot, shoot, shoot, as these gentlemen seem to recommend? I confess I have shot many, and I have also shot many a promising fruit bush or tree, and have seen many a dangling bough, and others lacerated and killed, and have seen that I had done more harm than the bullfinches; I have picked up many a beautiful cock, a gem of Nature's handiwork, and could not but feel ashamed to see him cut to pieces, or into a shapeless mass of bones, flesh, and feathers. "Very sentimental," says some critic. Perhaps, but true. Well, I have adopted the last few years a different plan, which has answered better in many ways. My advice is, Catch them in the months of October, November, and December; they are very easy to catch, and this is before their depredations commence with me. During the past two severe winters only one has visited my fruit trees, while other people have complained continually. One hen bullfinch attacked my Gooseberry bushes, and I caught her in about ten minutes with a decoy and birdlime stick. Some years ago when they were plentiful I have taken as many as half a dozen from a stick in less than half an hour in my garden; and as they become very docile in confinement, and are perhaps as much sought for as any of our native birds, there is always a market value of about 1s. each for cocks and about 6d. for hens. They pay for catching. Mr. Harrison Weir, writing in the *Journal* last spring, said that "nearly fifty had been shot at Weirleigh, and still there was a pair wanted." Now if we put them at 6d. each all round (a low figure) they must be better caught, as few gardeners would reject 25s., to say nothing of powder and shot, and probably trees destroyed, for it is a difficult thing to get them in the right spot to shoot without doing some damage.

I will give as briefly as possible their food as near as my observations will allow for the year. January, the seed of dried-up Blackberries, seeds of Privet berries, and probably beginning Gooseberry and Currant bushes. February and March, mostly engaged on Cherry and Plum trees. In April they retire to the woods and thickets, feeding mostly on the buds of Hawthorn and any stray Dock seed that has been overlooked. Passing through a farm—which had not been cultivated last season—on Easter Monday I went through a field which was pretty well covered with Docks about 4 feet high, and bullfinches were plentiful, and there is no surer bait to lure a bullfinch in spring than a bunch of Dock seed. In May they feed mostly on Groundsel and Dandelion seed. In June they feed on Meadow grass seed, and are generally to be seen on new swaths of hay with linnets and many others picking out the seed from the hay, and then would be the time to look out for their insect-destroying propensity, as they have young; but if we examine the young birds before they are fledged the white kernels of the seeds are distinctly seen through their transparent skin on the neck and crop. In July they feed principally on Buttercup seed, but often come to have a few Raspberries, the seed, or rather kernel of the seed; and this applies to all seeds mentioned, as, unlike many birds, they eat only the kernel of the seed from fruit and berries. August, Buttercup, Grasses, and Charlock seed. September, Honey-suckle, and the larger kind of Blackberries which ripen first. October, November, and December, chiefly Blackberry seed and Nettle seed. There is also a bad weed locally known as Wildhops which is a favourite winter dish. All these I have seen them feed upon, and no doubt there are many other noxious weeds which they feast upon, and this is not a bad catalogue against their unfortunate bud-destroying propensity.—J. HIAM.

MR. HARRISON WEIR'S letter on this subject (page 276) is of great value, as it goes straight to the point Mr. Newman

would, had he lived, have most desired, and in fact suggested in his article on "Food of Small Birds"—viz., that of examining the contents of the birds' stomachs at different seasons of the year, to ascertain whether they are friends or enemies of the gardeners; and although Mr. Weir only gives the contents of the bullfinches' stomach in the spring, I must frankly confess he has the best of the argument, for he shows that at the very time Mr. Newman states they were friends, the contents of their stomachs proved them to be the reverse.

The only exception I took to Mr. Weir's letter is where he states, "It is perfectly useless to tell me or any naturalist gardener that we are all wrong," &c. I think he will find, if he will kindly refer to my letters, that I made no such charge, but merely gave two or three extracts from the writings of a most eminent naturalist, and one whose opinions were deserving of great respect; and although Mr. Weir proves him to have been wrong in his estimate of the bullfinch, he shows at the same time he was right about the chaffinch. In this the object of my troubling you has been obtained—viz., that of eliciting an authoritative statement, properly supported, of some competent naturalist on the subject of small birds, and I am greatly obliged to Mr. Weir for his contribution; and although I cannot hope to attain the proud position he occupies in the world of natural history, I am and hope to continue a humble follower in the same school. But as my opportunities of studying the habits of the bullfinch have of late been too limited, owing to their having left my locality, I do not venture to express my own opinion, but relied on that of one well versed in the subject.

I fear "J. S. W." has not correctly read my letters, but if he will refer to that on page 257 he will find Mr. Newman mentions *Hyberica brumata* as being destructive to fruit buds, and although Mr. Weir has shown him to be wrong about the bullfinch, I think it will be difficult to prove that on the entomological branch of his subject he was not likely to make any mistake, as he was one of our most observant, and at the same time one of the most able, delineators of the life histories of insects of his time.—W. R. R.

I HAVE been requested to give my opinion of the bullfinch as regards Apples, Pears, and other fruit trees besides the Plum. As to the Apple, it is the same as the Plum, the bird preferring the blossom buds of the richer-flavoured fruit, such as the Ribston Pippin, Cox's Orange Pippin, Margil, and the like to the culinary varieties, Lord Suffield, for instance, being scarcely ever touched. It is the same also with Pears, Gooseberries, and Currants. The mode of attack on the Apple is somewhat different from that of the Plum, as the bullfinch scoops out the leaves from one side of the bud until it comes to the blossom; the leaves are thrown down, and the blossom alone is swallowed. At this time I have several trees of Cox's Orange Pippin so attacked, and the ground is strewn with bright green healthy leaves with no trace of insect life on them, and the bloom buds remaining on the tree with the one side taken off and the blossom gone. My gardener, also myself, watched the birds attentively, and eight birds have been shot since last I wrote, and their crops were all filled with blossoms and nothing else. I am sorry to trouble you again, but do so at the request of others.—HARRISON WEIR.

P.S.—I send you bloom buds for inspection of Cox's Orange Pippin.

[There was not a trace of insects on the spur. Three of the leafy bracts were removed, and the blossom buds quite eaten out. Bullfinches are unquestionably destructive in the fruit garden, of which our correspondent, who is a great admirer and protector of birds, has adduced conclusive evidence.—EDS.]

THE LATE ROBERT FORTUNE.

As the melancholy tidings of the death of this gentleman reached us as we were preparing to go to press a fortnight ago we could only then make very brief reference to his labours in the cause of horticulture. A worker so assiduous, so competent, and so successful demands a fuller meed of recognition, and many who have enjoyed the fruits of his labours in the cultivation of the many valuable plants and shrubs that he introduced to this country will be glad to see a characteristic portrait, which we have the pleasure to submit, of him to whom horticulturists of every part of Europe and even America, are so greatly indebted. This portrait will not be the less acceptable as showing the man as he appeared immediately after completing his travelling career.

This energetic and successful traveller was born on September 16th, 1812, at Kelloe, Edrom, Berwickshire, and was educated in the parish school of his native place. At an early age he evinced a desire to follow the profession of a gardener, and in consequence he commenced his career as an apprentice in the gardens of Mr. Buchan at Kelloe. Subsequently he proceeded to Moredun, and thence to the Botanic Gardens, Edinburgh, where he applied himself with assiduity to the study of plants under Mr. MacNab. After remaining there three years he in 1842 left the Scottish capital, and was appointed Superintendent of an important department in the Horticultural Society's Gardens at Chiswick. This post, however, he did not long retain, for the news having reached England that peace was concluded with China, the Council of the Horticultural Society decided to send a traveller out to explore the northern part of that empire in search of plants, and Mr. Robert Fortune was the man selected for the task. In the spring of 1843 he commenced those journeys, which continued with but short intervals of rest until 1862. He arrived at Hong Kong in July, where he began his researches both on the islands and the mainland, but with little success, as the district had been previously explored. Proceeding to Canton and Macao the numerous gardens were searched diligently, the principal results being the exportation to England of the Fingered Citron and true Mandarin Orange. Chusan, Ningpo, and Shanghai were next visited with more or less success, and of the latter place Mr. Fortune wrote as follows in the Journal of the Horticultural Society for 1846, from which our extracts are taken:—

"In a country like this, which is everywhere flat and cultivated, it was not expected that I could find very many wild plants. Two, however, were met with, which have since attracted a considerable share of notice in England. I allude to *Cryptomeria japonica* and *Anemone japonica*. The latter was found, when in full flower, amongst the graves of the Chinese which are round the ramparts of the city. It blooms in November, when other flowers have gone by, and is a simple and beautiful ornament to the last resting places of the dead. If the number of wild flowers in this district was few they were well made up by those which I afterwards found in gardens and nurseries. From the number of flower shops in the city, which at this season were filled with *Chrysanthemums*, I was quite certain that there must be somewhere in the vicinity nurseries for their cultivation, but the great difficulty was to find them out. The Chinese here, who knew little or nothing of us except as their conquerors, were frightened and jealous, and would give no information on the subject. They always suspected that I had some other object in view than simply collecting the plants of their country. At that time I could not speak a word of the language; and my servant who was brought up from the province of Canton was equally at fault, so that everything was up-hill work with us. However, by examining every hole and corner of the city and suburbs, and sometimes getting the boys, who were less jealous than the rest, to assist us, we discovered several nurseries which contained large collections of plants, many of which were quite new and very ornamental."

Ningpo was first visited in the winter of 1843, and there an instance occurred which clearly indicates the dubious manner in which the Chinese conducted their commercial transactions, and which Mr. Fortune referred to as follows:—

"Here I had the same difficulties to encounter as I had at Shanghai, owing to the jealousy of the Chinese. Ultimately, however, I discovered several mandarins' gardens and nurseries, from which I made additions to my collections. All these things were of course out of flower, and some of them leafless at this season of the year; but it will be seen afterwards that many of them proved most remarkable plants. Here, as at most other places, I made many inquiries after the supposed yellow Camellia, and offered ten dollars to any Chinaman who would bring me one. Anything can be had in China for dollars! and it was not long before two plants were brought to me, one of which was said to be light yellow, and the other as deep as the double yellow Rose. Both had buds upon them, but neither were in flower. I felt quite certain that the Chinaman was deceiving me, and it seemed so foolish to pay such a sum for a plant which I would in all probability throw away afterwards, and yet I could not lose the chance, slight as it was, of possessing the yellow Camellia. Moreover, there was a written label stuck in each pot, both of which were old, and apparently the labels and writing had been there for some years. At last we compromised the matter; I agreeing to pay half of the money down, and the other half after the plants had flowered. On these conditions I got the Camellias, and took them with me to Hong Kong. It is almost needless to say that when they flowered nothing was yellow about them but the stamens, for they were both semi-double worthless kinds."

In January, 1844, Mr. Fortune returned to Hong Kong to despatch the plants collected to England, and then continued his researches in the neighbourhood of Chusan and Shanghai. The following description of the former region will prove of interest :—

"The flora of Chusan and all over the mainland in this part of China is very different from those portions of the south which I have already described. Almost all the species of a tropical character have entirely disappeared, and in their places we find others related to things found in the temperate parts of the world. I here met for the first time the beautiful *Glycine* (*Wistaria*) *sinensis* wild on the hills, where it climbs in hedges and on trees, and allows its flowering branches to hang in graceful festoons by the sides of the narrow roads which lead across the mountains. The *Ficus nitida*, so common around all the temples and houses in the south, is here unknown, and many of those beautiful flower-

ing genera which, as I before remarked, are only found on the top of the mountains in Hong Kong, here have chosen less exalted situations; I allude more particularly to the *Azaleas* which abound on the hill sides of this island. Nor is it *Azaleas* alone which meet the eye and claim our attention; *Clematises*, wild *Roses*, *Honeysuckles*, the *Glycine sinensis*, noticed above, and a hundred other things mingle their flowers with them, and make us confess that after all China is indeed the 'central flowery land.' There are several species of *Myrtaceous* and other *Ericaceous* plants which are also common on the hills, but no species of *Heath* has been ever found; and I believe the genus does not exist in this part of China. Early in the spring the hill sides were covered with a beautiful *Daphne* with lilac flowers (*Daphne Fortunei*), and the *Azalea ovata*, certainly one of the finest and most distinct species which I have introduced. *Weigela rosea*, one of the most beautiful shrubs of northern China, which was first met with in the garden of a mandarin near the city of Tientsin on this island, was



FIG. 48.—ROBERT FORTUNE AT THE AGE OF 54.

this spring loaded with its noble rose-coloured flowers. *Buddlea Lindleyana* was also seen this year in great perfection growing in the hedges on the hill sides, often side by side with the *Glycine* (*Wistaria*) *sinensis*."

During that season also several journeys were made to Ningpo, with the gardens of which Mr. Fortune was becoming well acquainted, and as he could then speak a little Chinese he experienced less difficulty than on the previous occasion. The discovery of Fortune's yellow Rose is referred to in the following passage :—

"The gardens of the mandarins, although small, were extremely gay, particularly during the early months of the year; and, what was of more importance to me, contained a number of new plants of great beauty and interest. On entering one of the gardens on a fine morning in May I was struck with a mass of yellow flowers which completely covered a distant part of the wall; the colour was not a common yellow, but had something of buff in it, which gave the flowers a striking and uncommon appearance. I immediately ran up to the place, and to my surprise and delight found that I had discovered a most beautiful new yellow climbing Rose. I have no doubt, from what I afterwards learned, that this Rose is

from the more northern districts of the Chinese empire, and will prove perfectly hardy in Europe."

The gardens and hills near the town were all thoroughly explored and many fine plants found. The beautiful *Forsythia viridissima* is described as common by the roadsides, and several *Viburnums* and *Hydrangeas* as equally plentiful. Another visit was paid to Shanghai to obtain some Tree *Pæonies*, and the mode in which this was accomplished is told as follows :—

"The history of this purchase is rather amusing, and affords a curious example of the kind of duplicity which I had to contend with. I had drawings with me of various Mountain *Pæonies* which were said to exist in the country; and when these were shown to a Chinese nurseryman in Shanghai he said he could get them, but that they were only to be procured at a place called Soo-chou, distant nearly a hundred miles, and that it would be rather expensive to bring them down. I asked him how many kinds there were, what were the colours of their flowers, and finally expressed a wish to have a certain number of each. He told me very gravely that he would undertake to send to Soo-chou for them providing I would pay him at the rate of a dollar for each plant. I was too anxious to get them to make any objections to the price, which

after all was not much out of the way if they were to be brought about a hundred miles. In the stipulated time the plants were delivered to me in excellent order and the money was paid. They were then taken down to Hong Kong and despatched to England, where they arrived in very fair condition. I had of course no opportunity of seeing their flowers at that time, and was now (April, 1844) anxious to get some more in flower, and intended to send my old friend back again to Soo-chou for another collection, stipulating, however, this time that all the plants should be in flower in order that I might have an opportunity of seeing their colours. One morning, however, as I was going out into the country, a short distance from Shanghai, I was surprised by meeting a countryman with a load of Moutans in full bloom. The flowers were very large and fine, and the colours were dark purple, lilac, and deep reds, kinds of which the very existence was always doubted in England, and which are never seen at Canton. Dr. Lockhart, an excellent Chinese scholar, being with me at the time, we soon found out the name of the Moutan district; and from the state of the roots in the man's basket I was quite certain that the plants had not been more than an hour or two out of the ground, and that therefore the distance from Shanghai could not exceed six or eight miles, a surmise which we afterwards found to be perfectly correct. This was doubtless the place where my nursery friend had procured his plants in the autumn before, and where he would have gone again had I not been lucky enough to find that I could easily go there myself."

We will conclude our extracts from Mr. Fortune's admirable account of his journey with the following concerning *Phalænopsis amabilis*, which he found on a visit to Luçonia:—

"After some trouble I discovered the locality of the beautiful *Phalænopsis amabilis*, and procured a large supply of the plants for the Society. As my visit here was a secondary object I had very little time to spare, and therefore took every means in my power to make the most of my time. I was in the habit of making an Indian's hut in the wood my headquarters for a certain time, where I held a sort of market for the purchase of Orchidaceous plants. The ground in front of the hut was generally strewed with these plants in the state in which they had been cut from the trees, and often covered with flowers. The *Phalænopsis*, in particular, was very beautiful at this time. I was most anxious to get large specimens of this plant, and offered a dollar, which was a high sum in an Indian forest, for the largest specimen which should be brought to me. The lover of this beautiful tribe of plants will easily imagine the delight I felt when I saw two Indians approaching with a plant of extraordinary size, having ten or twelve branching flower stalks upon it, and upwards of a hundred flowers in full bloom. 'There,' said they, in evident triumph, 'Is not that worth a dollar?' 'You have gained the dollar,' said I, as I paid them the money and took possession of my prize."

On the 22nd of December, 1845, Mr. Fortune left China for England, having brought a most successful journey to a close, during which he had despatched sixty-nine cases of plants besides numerous packets of seeds. Of the plants introduced for the first time, in addition to those already mentioned, were such general favourites as *Dielytra spectabilis*, *Rhynchospermum jasminoides*, *Selaginella Wildenovi*, *S. cæsia*, *Jasminum nudiflorum*, and *Spiræa prunifolia flore-pleno*.

After his return to this country in 1846 he was appointed curator of the Apothecaries' Botanic Garden at Chelsea, but this he resigned in May, 1848, when he again started for China, being commissioned by the East India Company to collect Tea seeds and plants for India. During the two following years he conveyed about seventeen thousand seeds and two thousand young plants to the north-eastern provinces of India, which laid the foundation of Tea cultivation in those districts. The East India Company again sent him to China in 1852, and after four years of wanderings he returned to England; but in 1858 he proceeded to China in the service of the American Government. This was his last expedition, from which he returned in 1862. He was one of the Committee of the International Exhibition in 1866, but afterwards retired from public life and occupied himself in farming.

Mr. Fortune wrote several books descriptive of his adventures, the habits and customs of the people, and the scenery of the various districts visited. The first was published in 1849, and is entitled "Three Years' Wanderings in the Northern Provinces of China." This work gives most graphic and pleasing descriptions of those little known countries, and was well received by the general public. In 1857 appeared a summary of his travels in the Tea countries, entitled "A Residence among the Chinese on the Coast and at Sea." His last work was published in 1863 under the title of "Yeddo and Pekin," which described his later travels in Japan and China. All these works were characterized by a clear and pleasant

manner of narrative that gained for the author considerable reputation as a man of accurate and extensive observation.

As will be seen Mr. Fortune was a man of untiring industry; he was also characterised by extreme modesty, and by his general demeanour won the esteem of all who had the privilege of enjoying his acquaintance.

CARPET BEDDING.

TOTALLY different is the design now figured from the one engraved last week. It is one of Mr. Graham's productions,

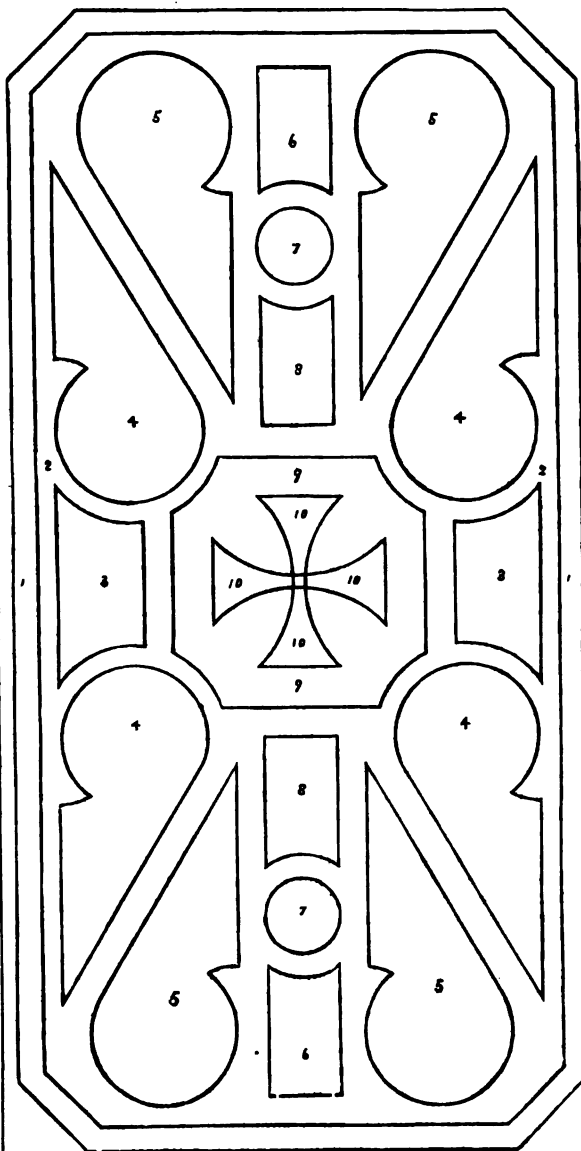


Fig. 49.—MODE OF PLANTING.

- | | |
|---|--|
| 1, <i>Echeveria secunda glauca</i> . | 6, <i>Herniaria saxatile</i> . |
| 2, <i>Mesembryanthemum cordifolium variegatum</i> . | 7, <i>Alternanthera amara</i> . |
| 3, <i>Antennaria tomentosa</i> . | 8, <i>Pachyphytum bracteatum</i> . |
| 4, <i>Alternanthera magnifica</i> or <i>A. paronychioides major</i> . | 9, <i>Sempervivum montana</i> , slightly raised and planted thickly. |
| 5, <i>Alternanthera paronychioides</i> . | 10, <i>Alternanthera amara</i> . |

and, according to the plan of planting which he proposes to carry out this year at Hampton Court, will have a good effect. The border lines (No. 1) are intended to be raised 4 or 5 inches, and planted with two rows of *Echeverias* and a little *Sedum glaucum* interspersed. This bed can be planted without *Echeverias* and look well, but it will have a better appearance by marking out all the small beds in the design with these useful

plants. A variety of plants are suitable for No. 2, but few excel for a low yet cheerful groundwork *Mesembryanthemum cordifolium variegatum*, which is quickly propagated.

BROCCOLIS IN CORNWALL.

It may interest your readers to know that in Cornwall we have a constant supply of Broccoli from the depth of winter to May. The seed is sown in beds in March, and the young plants are transplanted after the early crops of Potatoes in June. The heads attain a great size, often from 1 to 1½ foot in diameter, very compact, white, and they come into use from November to January. This variety is known as the *Penzance Early White Broccoli*. Some Cauliflower seed was brought home from Naples by the late W. Bolitho, Esq., many years ago, and crossed with a peculiar and poor variety then growing in this district, and thus produced one of the most useful varieties grown, at least in this district. Of course there is a vast difference in the climate of the north of England and that of Cornwall, which would most likely make a difference in the size, hardiness, &c.—W. ROBERTS, *Penzance*.

REVIEWS OF BOOKS.

The Weather of 1879. By EDWARD MAWLEY, F.M.S., Hon. Secretary of the National Rose Society. London: Bemrose and Sons, Paternoster Buildings.

THOSE of our readers who have read Mr. Mawley's meteorological papers in the "Rosarians' Year Book" will need no assurance that the author is a close and careful observer of weather changes and an accurate recorder of the results of his observations. The manual now published has reference to the weather near London last year, and compared with that of an average year. It contains tables of daily observations of the barometer; shade, radiation, and soil temperatures; relative humidity of the air, wind, rainfall, sunshine, and cloud, with monthly notes of the mortality in London, and a diagram which is worthy of especial attention. This diagram shows at a glance the fluctuations of the barometer and thermometer as compared with a mean average of thirty-eight years, the mortality in London compared with an average of ten years, the relative extent of respiratory and zymotic diseases, with the mean amounts of cloud, humidity, and wind velocity as compared with the averages of upwards of thirty years; also the rainfall of each month and the average of nineteen years. Only during March and the last three months of the year was the rainfall below the average, while during the summer months, May to September both inclusive, it was greatly above the average.

The concluding remarks of Mr. Mawley are so interesting and so admirably pourtray the character of the manual that we cannot resist citing them.

"The year 1879 was colder than any of these thirty-eight years, and with one exception the most gloomy. Both January and December were extremely cold, while July was extraordinarily dull. It is not, however, the remarkable dullness or coldness of certain months or seasons that call for special notice here, so much as the fact that the whole twelvemonth continued from first to last so persistently sunless and cold. Moreover, it should not be lost sight of that the two months preceding this year, as well as the month immediately following it, were all singularly cold ones.

"Nevertheless, if we leave out of consideration the important elements of temperature and sunshine, the same uniformity will not be found to have been in other respects maintained. In fact, 1879 appears to have shown in several ways a strange partiality for extremes. For instance, the fall of rain during the summer was excessive; but for the three months at the close of the year so slight as to be remarkable. Again, in July there was not a single calm day, whereas in December there was not for weeks together a single windy one. Then again in January the air was exceptionally dry, while in July it was more humid than in the corresponding month of any year since 1848—or for thirty-six years. The most seasonable and pleasant months were those of September and October, whereas the weather of July proved to be the most abnormal of all.

"If we now turn to the mortality curves on the diagram it will be at once seen that the death-rate in London was unusually high during the winter and spring, but remarkably low for the season during the height of summer. Diseases of the respiratory organs proved very fatal during the earlier months of the year; while in July and August deaths traceable to those of the zymotic class fell much below the average number.

"As regards the influence of the seasons upon vegetation, never before had the present generation of agriculturists experi-

enced so disastrous a year. In most cases the hay crop was harvested in very bad condition. The Wheat approached nearer to a total failure than in any year of our period; other descriptions of corn being also as a rule very late and deficient in yield; while the roots, although usually supposed to delight in moisture, came to no size. To the horticulturist the year was hardly more favourable, the prolonged and severe winter killing all but hardy plants in the flower garden, and a large proportion of the winter stock of vegetables in the kitchen garden. The fruit season was, moreover, late, and the crops very poor. In fact, almost the only crop that appeared to rejoice in the frequent and heavy rains, the sunless skies and the low temperature of last summer, was the crop of weeds, which, true to the proverb concerning them, "grew apace," and such was the condition of the ground that it was quite impossible to keep them under."

This excellent summary of the weather of 1879, and its effect on health and vegetation, will commend the manual to the many who are interested in the important subject, which is treated so copiously yet concisely and well.

HARDY FRUIT PROSPECTS.

IN the neighbourhood of Liverpool the Pear crops, even if the weather continues favourable, and all the bloom that the trees have produced sets, the crop will be very light. The trees on walls and as standards have the least bloom, while small pyramids and espaliers have the most. Apples generally are showing much better, in fact with us a row of dwarf trees on the Paradise stock have much more bloom upon them than we have ever seen before. The trees are thin and open, which allows abundance of light and air to pass through them. Standards are showing an average quantity of bloom. The Damson trees and Plums generally, also Cherries, are white with blossom, and so far the weather is favourable for the setting process. Small fruits are showing a heavy crop, and the Gooseberries we may almost consider safe, as the trees are now well covered with foliage, which will protect the fruit considerably in case of frost. Peach trees upon walls will again prove a failure, many trees not having a flower upon them; at the present time they appear much less injured by the frost than we at first anticipated. In the most favourable seasons round Liverpool Peach-growing outside is not remunerative. Walls covered with good trees would amply repay to be covered with glass, and give good return for the first outlay. The trees would not entail any more labour, if so much, as they do on uncovered walls; a good return on the one hand would be almost certain, on the other none.—WM. BARDNEY.

BARNE HOUSE AND GARDENS.

THIS is the residence of Captain Moore, late M.P. for County Tipperary, and as it possesses many special features from a horticultural point of view, a few references to what a visitor may expect to see may not be uninteresting. The residence was in the Elizabethan style of architecture with two advanced wings, but has recently been remodelled at considerable expense and under the immediate supervision of the proprietor. It is situated on a gentle southern incline, and commands a fine panoramic view of interesting portions of Tipperary and the adjoining districts of Waterford. One of the sights of Barne is the extensive lake immediately in front of the fine old mansion. Whether you consider its soothing and refreshing influence in summer, or its utility from a skating point of view in winter—(crowds of skaters from Clonmel during the past winters were freely admitted and hospitably entertained)—or its graceful swans and wild fowl, plants, shrubs, dells, and artistic bridges, it is always an object of interest to the visitor or tourist. Skirting the gracefully winding avenue on each side are two rows of stately old specimens of *Cedrus Deodara*. Views through those across the finely undulating lawn, and taking in a rich country with historic Slievenamon and the serrated Comeraghs in the distance, are sights the lover of the picturesque can see and return to enjoy. In olden times it was not uncommon to plant *Coniferae* in conical mounds of earth. Those mounds remain there still, but as they throw off the moisture that might percolate to refresh the fibrous roots they are rarely met with now.

The flower garden and glass structures are on the southern and eastern sides of the mansion, and agreeably flanked on the north and north-east by dense clumps of evergreens, which act as screens against inclement winds from those points. Before reaching the flower ground the attention is arrested by the fine mossy carpet of green on the pleasure ground and the

noble specimens of Conifers judiciously dotted about. The *Wellingtonia gigantea* seems an exception; for though 80 feet high and still slowly progressing, the substratum which the young roots have reached is doubtless uncongenial. Other fine specimens of *Abies Nordmanniana*, *Cupressus Lawsoniana*, *Piceas*, and *Arbor Vitae* are, however, healthy and ornamental. Specially noticeable is a young *Juniperus japonica aurea variegata*. The twisted glaucous green and gold foliage is very striking, and the specimens alternate effectively with *Retinospora obtusa aurea*. Such shrubs and trees as *Laurus*, *Lonicera*, *Berberis*, *Escallonia*, *Arbutus*, *Ilex*, *Phillyrea* among evergreens, and *Betula*, *Fagus*, *Fraxinus*, *Platanus*, *Populus*, and *Quercus* among the deciduous trees, are represented by many fine species, especially the last, as here there are many noble old Oaks of giant proportions. Hardy Azaleas and *Rhododendrons* are also attractive features planted in peat beds and fully exposed. In the list of plants injured by the frosts of 1878 perhaps those that suffered most were the Sweet Bays. In most cases these were quite destroyed, the old stems being now utilised for trailers and creepers, such as *Periwinkles*, *Tropeaeolums*, *Lonicera*, *Clematises*, and others, and the effect can be easily imagined. *Fuchsias* on walls are the only other shrubs quite dead, as the intelligent head gardener, Mr. Power, saved the *Myrtles* by making straw protectors, bee-hive fashion, and covering the shrubs. A *Palm*, *Chamærops Fortunei*, unprotected was uninjured. *Aucubas*, *Arbutuses*, *Escallonias*, *Eugenias*, *Euonymuses*, *Daphnes*, and *Laurels* were more or less affected, probably owing to the imperfectly ripened wood and sunless summer of 1879, more than to the frost of winter, as we had none since the first week of December worth noting.

The absence of Captain Moore and family accounts for the state of the spring bedding; still, many good old plants were attractive. This is one of the few places where *Lobelia cardinalis* bedded out escaped the last two winters by a little timely protection. It is now pushing up rapidly. *Anemone fulgens* and *A. coronaria* when planted in separate beds contrast finely, especially as here accompanied by *Erythroniums*, *Narcissuses*, *Violas*, and various *Lilies*. *Belladonnas* growing in front of the glass structures are very promising. *Gladioli* wintered out, too, are now several inches high. The conservatory is a large dome-shaped, semicircular in front, and with a stove for the western and a greenhouse for the eastern wings. A high retreating stage in the centre is now brilliant with *Cinerarias*. The seed was from Carters', and if quality and variety are considered it does the firm credit. The house is, however, too high for them, and from the distance of the glass they seem slightly drawn, being in other respects well grown. The effect is enhanced by an artistic arch over the stage, from which depend such handsome and desirable climbers as *Plumbago capensis* and *Habrothamnus elegans*. Another of the *specialities* here is the fine collection of *Amaryllises*, the plants now bearing large and profuse blooms. They are very effective among foliage plants. Such good old *Begonias* as *Rex*, *Frœbelli*, and *fuchsioidea* are also grown here. There are some fine specimens of *Camellias*, *Azaleas*, and *Orange trees* in large square tubs, capable of being opened at the sides for convenience.

Among many other good plants, models of healthy growth, may be mentioned *Ficus japonica*; *Genistas*, *Salvia gesneræflora*, and *Deutzias* are also effective. The collection of *Ferns*, especially hardy native species, is also very large. Outside in the hardy perennial and herbaceous garden double *Wallflowers* are in bloom; *Hellebores* are declining after doing their winter duty; while *Delphiniums*, *Phloxes*, *Pansies*, *Lupins*, *Myosotis*, *Candytuft*, and *Oxalis* are in fine condition and most promising. Those hardy plants evidently like a partial shade, such as is here afforded by a shrubby border and cool treatment, none of the *Primula* family, for instance, thriving when fully exposed to the midday sun. The vegetable and fruit gardens were next visited, and then the vineries, propagating department, frames, pits, &c., taking a general view of the fine stock of vegetables, wall and bush fruit. I have some notes on each, but after reading the graphic description of Drumlanrig Gardens on page 270, with its 60 acres of garden and as many gardeners, I am unwilling to further intrude on your space, except to say every department at Barne indicates careful treatment, and that the worthy proprietor takes a warm interest in horticulture and garden embellishment, now much less patronised than it deserves in Ireland.—W. J. M., *Clonmel*.

DENDROBIUM PULCHELLUM.—This is a valuable Orchid for baskets, the flowers being large and beautiful, contrasting

strikingly with the miniature appearance of the pseudo-bulbs. The flowers of our plants are fringed like those of *D. Devonianum*. While growing it requires plenty of heat and moisture, and must be liberally supplied with water. It succeeds best in sphagnum moss, and delights to have its roots rambling over the sides of the basket. Provided the growths are well ripened and rested in a cool house, the plants flower freely during the present month, and continue between two and three weeks in good condition.—W. BARDNEY.

THE CORNISH MAIDENHAIR FERN.

THIS comparatively new and very rare Fern, *Adiantum Capillus-Veneris* var. *cornubiense* (Tyerman), was discovered about six years ago by Mr. Trevithick near the cutting of the St. Ives (Cornwall) railway, when only a very limited quantity of it was found. This is a very beautiful Fern and much superior to the species, being more graceful and bushy. The fronds are more than twice the size of the common one. It may be termed a hardy *A. farleyense*, it being very similar to that fine Fern. It must be propagated by rhizomes, as the fronds do not produce spores. When first found it was supposed to be merely a two-year-old seedling of the common *Adiantum*, which very often produces fronds twice the size the second year than ever afterwards, especially those found in the Fintalge district. The size of this is consistent with that theory, and too much cannot be said in favour of this grand acquisition to our hardy Ferns, of which I enclose two fronds.—W. ROBERTS.

[The pinnules are much more deeply cut than those of *A. Capillus-Veneris*, and the fronds are very beautiful.—EDS.]

FLOWERING BEGONIAS.

I THINK no plants will adorn a stove with as little trouble as flowering *Begonias*, and those who have much house decorating will find them most useful.

To have a succession of bloom several species and varieties must be grown. To commence at Christmas we have the beautiful *Begonia insignis*; it is a strong grower, with fine pink-coloured flowers, and *B. fuchsioidea*. Next in order come *B. Saundersii*, *B. Digswelliensis*, *B. Ingrami*, *B. erecta Craigiana*, and *B. manicata*; to be followed with *B. zebrina*, *B. metallica*, *B. nitida*, *B. parviflora*, and *B. Weltoniensis*. For the summer and autumn months the tuberous-rooted section are the best to grow, and those are best grown in a greenhouse temperature.

The culture of the flowering *Begonias* is not very difficult, all they require being a warm moist atmosphere of about 65° or 70°. April is the best month in which to strike the cuttings. When rooted they should be potted off singly into small pots and grown on in an intermediate temperature through the summer, and well attended to as regards repotting, watering, and keeping them free from insects.—SOUTHERN GROWER.

NOTES ON VILLA AND SUBURBAN GARDENING.

GREENHOUSES AND FRAMES.

Plants by Post.—Owing to the severity of the past winter there are numbers of imperfectly heated glass structures almost destitute of their ordinary occupants. Many very beautiful plants for almost all the months of the year, some of which have already been alluded to, may be raised from seed. To supplement these it is advisable for those who do not wish to go to the expense of buying plants established in pots to adopt the cheaper method of having rooted cuttings sent them through the post. Those nurserymen and florists who advertise in this Journal the sending of plants by post may be relied upon, not only with regard to the varieties offered, but also as to the admirable method in which they are packed. The difficulty with amateurs is establishing these rapidly grown plants, the vendors, as can be imagined, being unable to afford much time for hardening off. Those who may have either a mild sweet hotbed, a stove, or a vinery that is being forced, at hand will find no great difficulty in growing them on. Where, however, a cool house or frames only are possessed the purchase of many kinds had better be delayed till the nights are warmer, at which time by opening less freely in the mornings and closing early in the evenings a suitable temperature may be obtained. *Fuchsias*, *Heliotropes*, *Salvias*, *Petunias*, *Lobelias*, *Verbenas*, *Mimuluses*, *Abutilons*, *Chrysanthemums*, *Carnations*, and the hardier bedding plants may with careful treatment be established in a cool house, but such kinds as *Coleuses*, *Begonias*, *Bouvardias*, and others require heat.

The plants when first received should be submerged in water at

a temperature of 65° or 70°, and when freshened up potted singly into very small pots (thumbs), using light sandy soil. The above temperature is favourable for their reception, whether in house or frame or hotbed. In a cool house either a handlight, or a box covered with squares of glass, placed in the warmest part of the house is necessary, in order to keep them as close as possible till established. Sufficient air should be admitted each morning to dry the foliage, thereby preventing its damping off, and shade from bright sunshine with sheets of paper. The choice of varieties in most instances had better be left to the vendors, all that is necessary being to state the kind of structure in which they will be grown. The tops of the plants when grown sufficiently long may be taken off and inserted as cuttings. To obtain stocky plants keep the young growths pinched back to within one or two joints of the last starting points, and provided the plants are well rooted shifting them on when breaking afresh. Never give large shifts, and the poorer and finer the soil employed the greater the need of very careful draining, using moss to cover the crocks.

Coleuses.—These can be grown to a great size in comparatively small pots, providing liquid manure is freely given. Overpotting is the cause of many a failure in growing Coleuses. Some of the now innumerable new varieties are strikingly beautiful, but many of the older varieties are very ornamental, and as a rule more easily grown.

Begonias.—Of these, again, there are a great number of extremely beautiful new varieties, notably the large-flowering tuberous-rooted kinds, and which when of a fair size succeed admirably in a cool house. This section delights in a more loamy soil than is usually given. A compost consisting of three parts turfy loam to one part of peat, leaf soil, or decayed manure, with a good addition of either road grit or sand, will be found suitable. The seed germinates freely in a moist heat. The seedlings should be pricked off into well-drained pots or shallow pans, employing light and fine sandy soil; next potted off singly into thumb pots, and finally into 4-inch pots, using coarser soil. The plants will flower the same season and form strong bulbs for the next season's display, when they may be started and grown in a cool house. They can be bought at a comparatively cheap rate, and should be placed in small pots and afterwards shifted into larger pots.

Of other Begonias *B. Weltoniensis* is a very popular autumn-flowering plant either for the greenhouse or window. Cuttings strike freely in gentle heat, and should be kept well pinched in and grown on till a good head is formed. Those who may have a stove will find such old favourites as *B. fuchsoides*, *B. Digwelliensis*, *B. punctata rosea*, *B. nitida rosea*, and *B. nitida odoratisima* also very ornamental and useful for cutting from during the winter and spring. They are really perpetually flowering, but during the summer young plants should be raised and grown on. For the two last mentioned 10-inch pots will not be found too large for flowering them in, as they are strong growers, while the others are useful in either 5-inch, 6-inch, or 8-inch pots.

Balsams.—Plants in pots of these are very showy during the summer, and are not at all difficult to manage. They are often spoiled when in a young state through being sown thickly in strong heat and allowed to become drawn up and weakened in the seed pans. Sow the seed thinly, and place the pans in gentle heat as near the glass as possible, potting off the young plants when they have formed their second leaves, burying the stem if possible up to the seed leaves. Before they become rootbound shift them into 5-inch pots, and eventually—if large plants are required—into 8-inch pots, picking off the most forward buds at this time. A mild hotbed suits them well, but they may be raised and grown entirely in either a cool house or frame. To avoid the check caused by sowing in pans and potting off sow seeds singly in small pots. A rather coarse rich soil is suitable, but almost any common soil may be used.

Chrysanthemums.—Those still in cutting pots should at once be potted off singly into small pots and returned to a cool house or frame, and shifted into larger pots before becoming rootbound. Do not pinch out the head unless bushy plants are required, as standards are the easiest grown and, as a rule, give the best results. It is not yet too late to strike cuttings for this mode of culture.

WORK FOR THE WEEK.

KITCHEN GARDEN.

THE seed for the principal crop of Beet must be sown without delay in drills 12 to 15 inches distance apart. The main crop of Dwarf Kidney Beans and Scarlet Runners should also be sown. Negro and Canadian Wonder are the best dwarf varieties, and Champion is the best of the Scarlet Runners. Where long sticks are employed the rows for the latter may be 6 feet apart, or with short sticks the rows may be 8 feet apart, the plants being stopped. The seeds may be sown about 6 inches asunder in double or single rows, the single rows being preferable, and 2 or 3 inches deep according to the nature of the soil. Runner Beans like plenty of moisture at the roots, hence when the Beans are up earth them up so as to form a rather wide row, and after sticking mulch with short manure. Sow Chicory seed in drills about a foot apart in an open situation, and thin the plants to about 9 inches distance

apart, as the larger the roots the finer will be the heads when forced. Make successional sowings of Peas and Broad Beans, utilising the spaces between the rows of Peas for sowings of Spinach and Radishes. Sow Turnips occasionally. Broccoliis for late use should be sown at once, and the varieties for autumn and early winter use, also Cauliflower for late summer and early autumn. The different varieties of Kales may yet be sown, and the Ulm varieties of Savoy, which are very valuable for planting about a foot apart after the early summer crop of Potatoes and Peas, and are more highly appreciated than the larger varieties. As ground becomes cleared of Broccoliis and other crops trenches should be prepared for Celery; the spaces between the trenches may be sown with a single row of Lettuce, which properly attended to will give a fine crop during the summer. Afford copious supplies of liquid manure to Cauliflowers reared under handglasses, and earth up the plants as necessary. Tie up the Cos varieties of Lettuce when dry so as to secure well blanched heads. Where Onions are in request for pickling, seed of the Silver-skinned variety should now be sown rather thickly broadcast. Take advantage of suitable weather to surface-hoe the quarters or wherever weeds are likely to be found, especially between the rows of Onions, Carrots, Parsnips, &c.

In the glass department sowings of French Beans may yet be made in pits, and Potatoes as they become fit for use may be lifted so as to liberate the frames or pits for other purposes, storing the Potatoes in samples as are usually required daily in flower pots covered with soil. Constant attention will be required in stopping, tying, and watering Tomatoes, removing all laterals from plants in fruit, shifting those for planting against walls into 5 or 6-inch pots. Prepare beds or ridges for Gherkins or ridge Cucumbers and Vegetable Marrows, the plants being grown on and hardened off preparatory to planting. Supply Carrots with water liberally, and damp them lightly overhead every morning. Afford copious supplies of liquid manure to Kidney Beans in bearing, and keep the pods closely picked.

FRUIT HOUSES.

Pines.—Young plants in course of preparation for fruiting should have robustness of growth and sturdiness of habit, and therefore require to be kept in a position to obtain plenty of light and air, avoiding crowding them. The solar heat will now greatly assist in maintaining the requisite temperature, but under no circumstances must the house be entirely closed at a very high temperature, as this will tend to produce a soft, weakly, attenuated growth, which no after treatment can remedy. Syringe the plants twice a week, and maintain the air about them moderately moist by sprinkling the floors, &c., occasionally, employing fire heat only to prevent the temperature falling below 60° at night, and to maintain it at 70° by day. Commence ventilating at 75° to 80°, increasing the ventilation with the temperature, or diminishing the supply of air as may be required, so as to maintain it at 80° to 90° or 95° with an abundance of air, finally closing the house at 80°. Shade for an hour or two at midday when the sun is powerful will be an advantage. Maintain the bottom heat at 80° or 90° applying weak liquid manure liberally whenever water is needed. As the material of the beds settles or decomposes add some fresh material to the surface to keep the pots from being too much exposed. Plants with swelling fruit will be benefited by light shading for a couple of hours in the hottest part of the day. Too much moisture can scarcely be employed in the houses where the fruit is swelling off. Where fruit is required to be kept for a time the plants should be removed to a cooler house, the fruit keeping longer in good condition at this season than any other. As the suckers of fruiting plants become large enough screw out the centres of those not required for stock, retaining one or two of the strongest to each plant.

Figs.—The fruit of the earliest forced trees in pots will now be ripe, or nearly so; hence the supply of water at the roots must be diminished, syringing overhead discontinued, and a free circulation of warm air afforded, leaving the top ventilators open a little at night. Although watering is advised to be lessened during the ripening of the fruit the soil must be kept moist, and a moderate moisture in the atmosphere secured by an occasional damping of available surfaces; but this will only be necessary in very bright weather. As soon as the first crop is gathered syringe the trees twice daily, renewing the top-dressing, and watering at the roots with weak liquid manure or guano water. If the second crop of fruit be very abundant they must be thinned out, so as not to overtax the trees for early forcing next season. Trees permanently planted out in houses will require frequent attention in pinching out the top of the shoots and thinning out the strongest growths, so as to admit light and air to the fruit. Attend daily to syringing the trees, and supply water as necessary to maintain thorough moisture at the roots. The fruit on the trees in the earliest house will soon commence ripening, when the border must be examined, and if necessary give a thorough supply of water or liquid manure. Cease syringing the trees when the fruit commences ripening, avoiding a superabundance of moisture about the house, having a little ventilation at the top of the house constantly, and a free circulation until the fruit is all gathered. Do not gather the fruit until it is thoroughly ripe, unless it has to be packed.

Peaches and Nectarines.—The fruit of the early varieties of Peaches Early Beatrice and Early Louise will now be ripening, and the foliage and fruit must be kept dry, but the border should not be allowed to become very dry, or it will act injuriously upon the growth and affect the maturity of the buds for future bearing. Hales' Early, Early Alfred, and Early York will form the connecting link between the very early varieties and such standard varieties as Royal George, Noblesse, and Grosse Mignonne, which are several weeks later in ripening, Royal George being six weeks behind Early Beatrice. Hunt's Tawny and Lord Napier Nectarines form an admirable prelude to Elruge and Violette Hâtive, and a good succession may be secured in one house, the only change in the treatment being in not syringing such as have commenced ripening. As the fruit will not be ripe for some time yet the atmosphere must be kept moist by frequently sprinkling during the day, syringing the trees in the morning, and again when closing the house. The night temperature will, after stoning is complete, be perfectly safe at 65° to 70°; but 5° less, though it will retard the ripening, will not tax the energies of the trees so much as the higher temperature. Leaving the ventilators slightly open constantly at the upper part of the house will be an advantage. In the daytime 70° to 75° by artificial means, and 10° to 15° more with sun heat, will be suitable temperatures. There must not be any deficiency of moisture in the inside borders whilst the fruit is swelling, the surface of the border being mulched with short manure. Do not hurry fruit in the process of stoning; 60° to 65° at night is ample, and 70° to 75° by day, avoiding high night temperatures and sudden fluctuations by carefully attending to ventilation. The fruit in the late succession houses will require attention in cutting-in the shoots and thinning the fruit, but beyond removing those badly placed—i.e., on the under side of the branches—it is always well to wait after a season like the past until it is seen which fruit takes the lead in swelling. Syringe all trees twice a day except those with fruit ripening, and commence ventilating early in the day, increasing it gradually with the temperature. Supply water thoroughly to inside borders when necessary, and weakly trees should receive liquid manure. If mildew appears promptly apply flowers of sulphur to the affected parts; fumigate upon the appearance of aphides, having the foliage dry. If syringing will not subdue red spider apply an insecticide. Brown scale yields to syringing with a solution of nicotine soap, 4 ozs. to the gallon of water, applied at a temperature of 90° to 100°.

FLOWER GARDEN.

At no season of the year does the herbaceous border yield so much interest as at present. Where the transplanting of hardy perennials has been unavoidably delayed it may yet be followed up on dull days, the plants being well watered and shaded from the dry winds and sun. Primulas, Gentians, Daisies, Auriculas, &c., as they go out of bloom may be taken up and divided, planting them on a somewhat shaded border, watering and shading until established. Many bulbous plants are now very beautiful, only requiring to be kept free from weeds. Seeds of most perennials should now be sown, the choicer seeds in pots or pans placed in gentle heat until the seeds have germinated, when the pots must be removed to a cold frame, pricking off the young plants when large enough, and subsequently planting them outdoors. The seeds of biennials should also now be sown rather thinly in rows in an open situation. Stir the soil between the plants of Pinks, and mulch with short dung. Wallflower seed may be sown, and insert cuttings of the double varieties in a shady border. Make another sowing of Mignonette and Sweet Peas, and finish sowing hardy annuals with as little delay as possible, though for late blooming another sowing may be made early in June. Clematises and other climbing plants grow so fast that they should be frequently examined, training, tying, or otherwise regulating the shoots, as they soon become entangled. Lawns must be well rolled and mown with a machine. If the grass is thin or a bad colour dress with soot or guano just before rain if possible, and if there be any moss dress with wood ashes. If worms are troublesome apply lime water composed of a peck of unslaked lime mixed with thirty gallons of water allowed to stand until nearly clear. It is best employed in showery weather, as the worms will more readily come to the surface, when they may be swept up and cleared away, afterwards rolling the lawn well. Evergreens may be transplanted with perfect safety, as they have not made any growth. Large Portugal and common Laurels, Yews, and Hollies should be cut back when moved, and they will be better furnished in a couple of years than those not so treated will be in four or more. In cold and exposed localities this is the best time of year to transplant evergreens, as they have a chance to make a growth and become established before winter. Hollies may be safely moved during next month and the early part of June. Evergreens that are loose and unshapely ought to be cut back so as to give a pleasing form and density of habit by the production of shoots to fill up vacancies. Many Hollies that are thin and unshapely, having lost their fine pyramidal form, become really handsome by judicious pruning. They break freely from the strong growths. New plantations of Violets should now be made in well manured deeply dug ground, selecting rooted runners or suckers,

planting the larger varieties, such as Victoria Regina, a foot apart every way if they are to be lifted for planting in pits or frames in late summer, but if to bloom where planted they may be allowed 8 inches more space every way. The dwarf and Neapolitan forms may be planted 9 inches apart every way if for lifting, otherwise they must be a foot apart.

Bedding Plants.—Seedlings of subtropical plants should be placed in the temperature necessary to keep them steadily growing, and in the full light, or they will become drawn and useless, the object being to secure sturdy plants. Any Cannas not yet started may be placed in leaf soil in a half-spent hotbed, and Caladium esculentum. *Aralia papyrifera* may be treated in the same way. It also answers admirably for the Tuberous Begonias, as they can be easily transferred to the beds in June. Seeds of Zeas, Chilean Beet, Amaranthus, Perilla, and other plants of quick growth may yet be sown. Seedling Lobelias, Ageratums, Verbenas, and Petunias should be pricked off in cold frames, keeping them rather close and shaded until established. Cuttings of those and similar plants may when struck be planted in cold frames, where they will make more progress than those confined to pots. Coleuses, Alternantheras, and Iresines, with *Mesembryanthemum cordifolium variegatum*, may still be propagated, as there is time to obtain them of good size for planting out by the early part of June. Seedling Pyrethrums (Golden Feather) may be pricked out on a warm border or in cold frames. The hardier kinds of bedding plants should be moved to cold pits or frames, as to continue them in vineries, Peach houses, &c., where they must necessarily be shaded, spoils their appearance. If a few inches of light rich soil be placed in a frame it will be admirable for seeds of Asters, Stocks, Zinnias, and other half-hardy annuals, keeping the frame close and the soil moist until the plants appear, when air must be admitted. Plants so raised will be every way preferable to those from seed sown earlier in heat. Earlier-sown half-hardy annuals should be pricked off in cold frames.

PLANT HOUSES.

Orchids.—Now and for some months to come most of the plants will be growing. The temperature in the East Indian house should be kept at 65° to 70° at night, and from 70° to 90° by day; the Cattleya house 60° to 65° at night, and 65° to 75° by day, and the Odontoglossum house 55° to 60° at night, and 60° to 70° by day. Shading will become more necessary, which is sometimes provided in such manner as to exclude air by the top lights. When the sun is sufficiently powerful for the plants to require shading there should also be a free circulation of air, to allow of which the canvas must be kept clear of the glass, being supported by laths at about 8 inches distance from it. In the East Indian house *Aérides*, *Vandas*, *Saccolabiums*, and *Phalenopsis* must be constantly moist, and their foliage kept clean by sponging with clear water. Very little fire heat will be required for cool Orchids for the next four or five months, the difficulty being to keep them cool enough in hot weather. A lean-to house with a north aspect is most suitable for them. Some *Odontoglossums* require a little more warmth than others, among them may be mentioned *O. citreum*, *O. hastilabium*, and *O. nevium*. *Lycastes* require to be kept at the warmest end of the house, but the *Masdevallias* should be grown at the coolest part of the structure. As the plants go out of bloom repot those that require it, and any unhealthy at the roots must have the old material removed and the roots washed in tepid water. *Zygopetalums* may now be repotted. *Lælia majalis* should be grown in the full sun and air. *Cymbidiums* requiring repotting should be attended to at once; they succeed in rough peat with some small lumps of charcoal intermixed, good drainage being provided, as they require a plentiful supply of water, keeping the base of the bulb about half an inch below the top of the pot. *Stanhopeas* that have flowered and started into growth should have the sphagnum renewed, and to grow them on quickly the baskets will require to be frequently dipped in tepid water. Orchids for exhibition must be carefully prepared for the change, or much harm may otherwise be done them. *Aérides*, *Phalenopsis*, *Saccolabiums*, and *Vandas* should be placed in a house with a north aspect and a temperature of 60° to 55°, or in the driest part of the Mexican house for about a week before being exhibited, water being gradually withheld so that the sphagnum is just kept damp. Cattleyas, *Dendrobiums*, *Epidendrums*, and *Oncidiums* will only require to have the flowers kept from damp, being placed where the air can reach them prior to removal. *Odontoglossum nevium* and *O. Phalenopsis* must not be allowed to become dry at the roots. If sticks are necessary let them be painted green, and surface with fresh moss so as to give a neat appearance.

TRADE CATALOGUES RECEIVED.

Thomas Painter, Smallwood, Stoke-on-Trent.—*Catalogue of Dahlias*.

Ellwanger & Barry, Mount Hope Nurseries, Rochester, N.Y.—*Illustrated Catalogues of Ornamental Trees, Fruit Trees, and Strawberries*.

Robert Mack & Son, Catterick Bridge, Yorkshire.—*List of Cultivated Dahlias*.

A. Woodyatt, Woodford, Berkeley.—*List of Seedling Plants.*
T. L. Mayo, Whitecross Road, Hereford.—*List of Herbaceous Plants.*

TO CORRESPONDENTS.

. All correspondence should be directed either to "The Editors" or to "The Publisher." Letters addressed to Mr. Johnson or Dr. Hogg often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense. Correspondents should not mix up on the same sheet questions relating to Gardening and those on Poultry and Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

CAMELLIA UNHEALTHY (*D. L. G.*).—If you will inform us when the shrub was transplanted we will endeavour to advise you as to its treatment; without fuller particulars no one could recommend the best course to adopt.

PLANTS FOR EXHIBITION (*W. J.*).—*Abutilon Sellowianum marmoratum* is eligible for staging in a collection of ornamental-foliaged plants; but *Cycas revoluta* cannot properly be included in a collection of Palms, as it belongs to an entirely different natural order of plants.

AURICULAS (*R. C.*).—The flowers sent are of ordinary border Alpines. They are not named varieties; and although they are attractive as garden flowers, they do not possess the necessary qualities entitling them to have names attached to them.

USES OF LIVERWORT (*Christine*).—By the old herbalists the *Marchantia polymorpha* was considered of great efficacy in diseases of the liver, but it is not now admitted into the British Pharmacopoeia. It was generally recommended to be boiled in small beer.

BORDER TO FOUNTAIN (*J. M. F.*).—As the border is raised a foot above the water, and is, we presume, constantly moist, the common Creeping Jenny, or Moneywort (*Lysimachia Nummularia*) would be certain to grow well, and would present a refreshing appearance throughout the summer, and also probably produce its bright yellow flowers abundantly.

PROPAGATING RHODODENDRONS (*G. T.*).—You cannot adopt any better mode than layering the lower shoots about a month after they have flowered. Give each shoot a twist, so as to slightly rupture the bark, and peg it securely and rather deeply in the soil, where it is moist, and there let the layers remain until they are rooted.

FANCY PANSIES (*Mrs. O. K.*).—The purple-striped variety is curious and pretty, the brown-striped rich but too small, the violet flower with white margin very attractive, and the large flower with maroon violet upper petals an effective decorative variety. Although useful border flowers and worthy of preservation they are not by any means equal to the best named varieties now in commerce.

GRUBS IN SOIL (*J. W. C.*).—We cannot recognise the grubs, which are dead, but if numerous they will be very difficult to eradicate. Burning the soil would be the best remedy, and the process would increase its fertility. If you cannot burn the whole of it you might at least scorch that employed for potting purposes. Turning the heap over and mixing in fresh unsalted lime liberally would also prove beneficial, as the moisture of the soil would slake the lime, which, if sufficient in quantity, would render the entire mass quite hot, and the soil would be suitable for all ordinary purposes.

BRICKS FOR GREENHOUSE (*New Subscriber*).—So far as we can understand your letter, you will require for the three walls, which should be 9 inches thick, about 3400 bricks. The back of the house is the worst position for the flue, which should be as near the front as possible. Stout earthenware pipes 9 inches in diameter would be better than bricks, the pipes, however, being connected with the furnace by 6 feet in length of brickwork. Such a flue would enable you to exclude frost from the house.

MAKING BLOOD MANURE (*W. B. T.*).—We presume you have used the blood with its full complement of water as taken fresh from the animals. It should first stand for a time and the congealed portion only be used. On this sufficient of the other ingredients named in the recipe should be poured until the mass becomes of a dry powdery nature. Much of the blood manure sold contains a large admixture of other fertilisers, presumably superphosphate of lime, which has the effect of rendering the mass still more dry and powdery.

GREENHOUSE MANAGEMENT (*G. B.*).—The management of a house depends on the plants that are in it. If you desire more information than the manual affords you we will readily answer any inquiries you may submit. You must, however, state your wants fully and clearly. The usefulness of our replies depends in a great measure on preciseness of form in the questions submitted. Too often little or no data is afforded us whereon to found replies, and we have to guess much that ought to be made clear by inquirers.

TEMPERATURES FOR VANDAS (*Rus*).—The plants in the collection to which you refer are kept in cold weather at a night temperature of 60°, when the nights are mild at 65°, with top and bottom ventilation night and day, the amount being governed by the weather. In the depth of winter the temperature is often lower than 60° and the ventilators are never closed. There is of course the usual increase of temperature during day, and moisture is judiciously determined by the heat, state of the weather, and condition of the plants. When we saw the specimens they were, like everything else in the same garden, in admirable condition.

PEAS FOR SUCCESSION (*A Subscriber*).—There will be a short break in the supply between the two varieties you name, but we do not think it will be so serious as you imagine; and at any rate the fault cannot rest with you. It would be well, however, for you to point out to your employer at once the prospective scarcity, and the reason of it. The only possible way of preventing the failure which you foresee is to sow at once William I., or some other approved early variety, in turves, or boxes filled with leaf soil in heat, and after preparing the plants for enduring the weather, to plant them out carefully in a warm position, surrounding the roots with leaf soil, watering with tepid water, and protecting from the winds with bushy sticks.

SNOWDROPS (*Colin Steddie*).—We have searched for the information you require and regret we are unable to find it. Snowdrops we believe are largely grown for commercial purposes in the rich low-lying districts known as the Parts of Holland in Lincolnshire, but we do not know the addresses of their cultivators. If you could make inquiries at Holbeach, Spalding, or Pinchbeck you might succeed in gaining information on the subject.

CARPET BEDDING PLANTS (*C. Andrews*).—The best plants for this purpose are enumerated in the Journal in connection with the diagrams that have been published. As dwarf richly coloured plants none equal the *Alternanthera*, but the soil must be made rich and friable for them. *Sedum glaucum*, small plants of Golden Feather, *Mesembryanthemum cordifolium variegatum*, *Mentha Pulegium gibraltaria*, *Santolina incana*, and *Echeveria secunda* glance are all suitable for the purpose. We shall shortly publish a diagram and mode of planting applicable for a border such as yours, or of any length required to be planted.

ANTS IN PEACH HOUSE (*Nil Desperandum*).—They are very difficult to eradicate. You may try the modes recommended to correspondents in last week's Journal. If half-picked bones are laid in the runs they will specify be covered with the insects, and by plunging them in boiling water they are mercifully killed. A sponge partially saturated with treacle has the same effect in attracting them. Camphor dissolved in water and poured in their haunts makes them uncomfortable, and carbolic acid diluted with twelve times its weight of water and sprinkled in their haunts is said to drive them away. Cotton wool wrapped round the stems of Peach trees and kept moist with tar prevents the ants ascending. They sometimes eat off the stems of the flowers, and also attack the ripe fruit, but otherwise do not do injury. They mostly abound where insects are present, and you will find it very advantageous to permit no aphides or other insects to congregate on the plants or trees in your house.

CUCUMBER FAILURE (*A Constant Reader*).—The plants have no doubt received a check by low night temperature in consequence of your inability to add fresh linings of heating material, and when plants of any kind are arrested in growth they inevitably become a prey to insects. The low temperatures recorded are quite sufficient to account for the fruit not setting and swelling. The insects sent were quite dead and shrivelled; they appear to be minute weevils of some kind and are very difficult to eradicate, especially in the case of plants in frames, and which cannot be syringed underneath the leaves; and besides, these insects feed chiefly at night. We think by raising the temperature of the frame and promoting the growth of the plants you will yet secure a crop of Cucumbers; but should the insects spread to an injurious extent we should with great care sponge the under surfaces of the leaves with soft soap and quassia water, which would render them distasteful to insect enemies. Soot sprinkled on the surface of the bed might be beneficial, as weevils lurk in the soil, and it would also act as a stimulant to the plants. A little tobacco powder placed in a muslin bag and dusted on the bed amongst the leaves after watering would also have a deterrent effect against the insects.

LATE-SOWN PRIMULAS (*A Lady*).—Primulas sown in October and carefully cultivated often make fine plants for flowering during the following October and succeeding winter. If the small pots are filled with roots repot the plants and place them on a shelf in a cool house, watering very carefully until the roots have taken possession of the fresh soil. Pots 4½ inches in diameter across the top inside will be large enough for using now, and the soil should be composed of equal parts of turfy loam, peat, and leaf soil, with a liberal admixture of sand and broken charcoal. Let the pots be clean, especially inside, and drain them well, protecting the drainage with a little moss, leaves, or flaky manure. When the plants require potting again employ 6-inch pots and a little stronger soil, and place the plants in a frame, shading them from bright sun, removing the lights during fine nights, as the dew is very beneficial to the plants. Pick off all flowers that show now, and continue doing so until September; and if you do not have fine plants it will be in consequence of some error in culture, possibly in watering, which requires to be done with much care and judgment. The *Clematis* may be treated similarly, but it is doubtful if they will make satisfactory plants, October being quite the wrong time of the year for sowing the seed.

OLD PLANTS OF CINERARIAS AND CALCEOLARIAS (*Idem*).—You ask "why" some people keep their old plants? It is because they wish to preserve the varieties. You perhaps also desire to know "how" they preserve them. As soon as the plants have ceased flowering, and before they ripen seed, they are cut down, and kept at this season of the year in a light position in a cool house. A little of the surface soil is removed from the pots and fresh light compost applied; the plants are then syringed regularly, and they soon push fresh growth. This is kept scrupulously free from insects, and the pots are placed in a cool frame facing the north. In a short time the young growths will emit roots from the base, and the offsets are then separated and potted, and treated similarly to plants grown from seed. Another very simple and good plan is to plant out the old stools in the light rich soil of a cool and moist north border during June, or when there is no danger of frost. They there make healthy sturdy growth, and the plants are taken up, separated, and potted. Plants raised from offsets are not usually so vigorous as those grown from seed.

CYCLOMENS UNHEALTHY (*Idem*).—The root-action is defective, caused probably either by watering excessively or insufficiently; or the plants may have been placed in a too cold, dry, and draughty house during the winter. As they have made no leaves you will have a difficulty in restoring the health of the plants. As soon as weather permits turn them out of the pots, removing a good portion of the old soil, and plant them out in your garden, watering them as needful during dry weather, and if leaves are formed take up and pot the plants in early autumn. To insure a stock of healthy *Cyclamens* it is desirable to sow some seed yearly, as the plants as they get old are prone to disease and deterioration. Your *Pelargoniums* will not need repotting; they only need a light position in a cool well-ventilated house, with cleanliness of the foliage and flower trusses from insects, and judicious watering, to enable them to flower freely.

CULTURE OF STREPTOCARPUS REXII (*H. Newman*).—The plant you sent is *Streptocarpus Rexii*. It is allied to the *Gesneras*, and differs very widely from *Stenocarpus Cunninghamii*, which is a Proteaceous plant. The *Streptocarpus* can be increased by seeds and by division of the plants. If the former plan is adopted the seeds should be sown in shallow well-drained pans containing a light compost of fibrous peat, very little loam, and plenty of sand. Place the pans in a stove or intermediate house and shade in bright weather. When the young plants appear above the soil and the first leaf is being developed carefully raise them, and prick them off about

3 inches apart in pans of similar soil but containing a little more loam. As they fill the space in these pans they can be shifted either singly into large 60-size pots, and finally into 4's, or placed three in a 4's, and afterwards transferred to 8's. For these pottings a small quantity of well-decayed horse or cow manure may be mixed with the soil. The plants should be grown on in a temperature intermediate between a stove and a greenhouse, and with careful attention to supplying water they will rapidly become vigorous plants of considerable utility for decorating the stages of the conservatory or stove.

REPOTTING AZALEAS (C. J. B.).—If the pots are so full of roots as you represent it will be impossible to "shake" the soil from them. If the plants really require repotting and you cannot employ larger pots, you may, after turning them out of the pots, cut a slice 2 inches thick off the bottom of the matted ball of roots, and also cut a slice off all round the mass an inch in thickness. The plants can then be placed in pots of the same size they are now growing in. These pots must be quite clean and well drained, the drainage being protected with turfy peat from which the soil particles have been shaken. The compost for potting should consist of firm peat two thirds, the remaining third consisting of light loam and old leaf soil, sand also being added liberally. It is important that the balls of the plants be very wet; the soil employed for potting must also be in the right condition as to moisture—neither too wet nor too dry. Pot very firmly, pressing the soil quite hard, and do not fill the pots, but leave plenty of space for holding sufficient water for penetrating the entire mass of soil. The plants may be potted when they have done blooming, and should be placed in a close, warm, moist house, and syringed frequently to encourage fresh growth. If you do not repot the plants you may improve their health by watering them occasionally with weak liquid manure made from cowdung and soot, and applied in a perfectly clear state. If you have a skilled plant-grower in your neighbourhood it would be desirable to invite him to examine the plants, and he would probably tell you the best course to adopt, your letter not affording sufficient data for us to form an opinion as to their actual condition.

NAMES OF PLANTS (N. Desperandum).—1, *Saxifraga granulata*; 2, *Erica colorata*; 3, *Diplazium glaucosum*. (J. Ham.)—*Helleborus viridis*. (R. Masters).—1 and 2 are insufficient for identification. We have repeatedly stated that we do not undertake to name plants without flowers. 3 is *Andromeda floribunda*. (J. Wallis).—*Helleborus viridis*. (H. S.).—*Amelanchier vulgaris*. (R. B.).—1, *Odontoglossum nevium*; 2, *O. cirrhosum*; 3, *O. citreum*; 4, *O. odoratum*.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

THE MANAGEMENT OF WOODLANDS.

(Continued from page 325.)

IN continuation of our examples of timber growing we must refer to a tract of poor soil, being a mixture of sand and gravel with blue pebbles in it. This wood is in a southern county, extends over about 84 acres, and is bounded on three sides by good roads. There is no underwood of any consequence or sufficient to turn to profit, but Ferns grow strongly. About sixty years ago it appears to have been planted in an irregular and careless manner with Scotch firs, some of which having been cut at intervals there are now only a few trees left, probably about forty to the acre. These are now all quite fit to cut for such purposes as railway sleepers, and it is easy for a business man to see how little gain has been or can be derived from timber left in the manner described. It must, however, be borne in mind that although this land is too poor for profitable cultivation of corn, it would be of considerable value under a course of cropping for the growth of timber, upon a plan which we intend to explain hereafter. In the immediate neighbourhood of this woodland there are extensive tracts of land belonging to various proprietors, but exhibiting precisely the same state of neglect and loss.

Our next example (No. 7, also in a southern county) is situated on a poor hillside on a chalk soil, and extends over about 17 acres. It is well planted with beech trees, which are distributed very regularly over the land, there being perhaps rather over 160 trees to the acre, and of course there is no underwood, as the beech suffers nothing to exist under its shadow. This timber is now arrived at maturity, or nearly so—that is, it would pay better to be cut and sold than to remain, because the interest of money would pay double the amount of the growth of the timber, and under our plan the land may be planted with firs, and continue remunerative in the future. Illustration No. 8 is a plantation of Scotch firs on some of the poorest soil we have ever seen in a southern county, and extending over about 40 or 50 acres with a very regular plant of about two hundred trees to the acre. This plantation is about seventy years old, perhaps more, and is deteriorating every year, for the trees having been

planted so long the land is too weak to carry them on into larger size; the crop should therefore be taken and sold, when the land may be planted again after steam cultivation with superior kinds of firs. We would here call the attention of the home farmer to the fact that it would be just as reasonable to allow his crops of corn to stand in the field for months after they were ripe as it is to allow plantations like this to remain when they may be sold to advantage and the land cleared for another crop.

We have now referred to all the illustrations of woodland we intend to give, except that of hedgerows and the timber which often grows in them. It will be necessary to consider that the hedgerows are frequently very injurious to the land on either side of them, and especially where wide-spreading oak trees are found, for these are sure to damage every kind of produce which is in cultivation near them. If we could only reckon the losses caused by them, the timber trees when cut and sold would show a bad account and leave the trees largely in debt to the land. With reference to the underwood, upon some soils the hedgerows would pay well, as our first illustration shows; but how few hedgerows there are which not only injure the corn lands on both sides, but are often so crooked as to greatly impede cultivation. Besides the shape of the fields we must ask the home farmer to consider the disadvantage of small fields, and where hedgerows most prevail the fields are generally of the least acreage; therefore there can be no doubt, whatever the value of the underwood may be, yet the advantage of removing it in the majority of cases would far outweigh all other considerations. It will thus be seen that wherever the land is adapted for either arable or pasture, in the majority of cases it is the most profitable treatment to cut the timber and invest the money, or use it by expending on the grubbing and bringing the land into cultivation, except where the land is too poor and shallow for corn or grass. It must be noted that there are very few instances to be found where the soil is too poor for carrying a crop of larch firs, for many of the poor hillsides on which only gorse or bush wood are now grown may be, if not too exposed, planted advantageously with larch firs. If the land be exceedingly steep and precipitous it may be made into narrow terraces, on which to set the trees, and where stone prevails, and it is sufficiently soft to yield to the spade and the pick, the soil will be continually improved by the effect of flooding rains, particularly in moist climates of the western districts of England and Wales, and also of the western highlands of Scotland. A crop of considerable value may then be obtained if the planting is carried out with judgment and upon the best system.

We must now refer to the methods of planting which we recommend under varying circumstances. We will take first such a soil as indicated in our eighth illustration. In planting this for a quick and profitable return, and where a crop of timber has been lately removed, the land should be broken up by steam power, so that the stumps and stools in the land may be removed at the least expense. When assisted by the necessary hand labour the ground may be cleared of all impediments, and the cultivation proceed by breaking up the soil at least 18 inches in depth. This will be effected at much less expense than by trenching. The wood, such as stumps and roots, may be disposed of by burning; the ashes, forming valuable manure and containing usually a large portion of potash, may be spread on the land, and afford nourishment for the young fir trees. In some districts, however, the broken wood may be more valuable as firewood. We do not advise the use of fresh farmyard manure, still good vegetable or loamy soil may be applied with advantage on very poor and stony land. When the land is cleared and ready for planting, instead of digging holes we prefer to plough out a deep furrow each way, which will form a trench deep enough to receive the young trees. When planted in holes dug with the spade the trees are often set too deep in the soil. We prefer to plant them rather shallow, in order that the roots may derive more benefit from the surface soil. The young trees should not be too large—say from 24 to 30 inches high, and if they have been grown and previously transplanted on poor soil so much the better. In exposed situations we recom-

mend planting round the outside, or rather on the south and north-western sides, of the plantation a single row of either *Pinus insignis* in the south or Scotch fir, and also, if the plantation is extensive, lines of the same at equal distances throughout, say at from 25 to 30 rods apart. Where the land is level and not much exposed this protection is unnecessary, and occupies land which would pay better under a uniform system of planting with larch firs alone. In following out the above method the trees should be planted 3 feet apart between the lines, and 2½ feet in the lines; this will give room during the first two years of growth for horse and hand hoeing, in order to keep down the grass and weeds which would otherwise compete with and injure the growth of the young trees. We advise planting closely as above named, because the trees protect each other, and they gather more moisture from the atmosphere in the summer months. Again, instead of growing side boughs the growth centres in the poles, which in consequence come earlier for sale, and are more valuable for some purposes.

(To be continued.)

WORK ON THE HOME FARM.

Horse Labour.—The work of horses has been somewhat impeded during the late rains, particularly upon the heavy land and strong loams; still, it cannot be said to be much in arrears, though in consequence of the land being so very foul generally there is much to be done before it will be in suitable condition for sowing mangolds or Swedes. The winter vetches, trifolium, and winter oats have been so much injured or destroyed that it is an important question for the home farmer to decide as to the next crop. Where the land is quite clean it may be scarified and sown with trifolium if a valuable green crop is required in the summer, or with summer vetches and tall rape mixed; or, if a corn crop is required, 8 bushels of black Tartarian oats and 1 bushel of barley mixed can be sown. On such land, however, if clean, mangold seed can be drilled in with artificial manures in the ordinary way. It is, in fact, quite a question of the requirements of the farm in the summer months, for in case of trifolium or rape and vetches being sown now the green fodder would be ready for use in nine weeks, and ready for cutting up for soiling to feed cattle or horses in eleven weeks from the time of sowing. All the land intended for mowing, whether of field grass or park and pasture land, should be rolled, as this is the latest time at which it can be done without injuring the grass.

Hand Labour.—Men will now be employed in cutting the oak timber which may be required for estate repairs; the women will assist in setting up the bark after being stripped and taken off by the men. The home farmer will now of course see that the fallen timber is removed to the timber yard or waste land as soon as possible, especially where the trees are lying on the arable land, and also upon any land of park or pasture intended for a hay crop. The oak bark also should never be left out a day after it is once dry enough to house, and may be taken up and loaded on carts or waggon and drawn into barns or cart-houses, to remain there until disposed of. If, however, it is not housed it should be carefully protected for a short time by sail cloths. It is, however, the best plan to sell it immediately, as it is too bulky an article to keep for any length of time, for it is sure to be in the way of farming operations of some kind at some time. Planting the Champion and Oxheart cabbage plants may now be going on. If the plants are of the pure sorts, and have been well cared for and protected during the winter, they will then be strong enough to stand the process of planting without finching much. They will also be strong enough for planting with the spade, which is certainly the best plan, because the plants are introduced into the land deeper, by which means they do better if dry weather succeeds the planting, and equally well if the weather should prove wet and stormy.

Shepherds will now have abundance of grass and green crops for the ewes and lambs, for in most cases they will have finished feeding in the water meadows, and will now be changed from the arable grass land at daytime into trifolium, vetches, &c., in the evening. The lambs, however, will be allowed to pass into a fold apart from the ewes, where they may be enabled to feed quietly and without disturbance. The lambs, if required for stock and not for selling in the fat market, will only require about a quarter of a pound of cracked beans, just sufficient to correct the effects of green fodder and to keep them healthy and growing. In feeding them, however, for the early London market they may have with advantage as much cake and cracked maple peas or beans as they will eat, taking care, however, to place the troughs—which should be covered—close up to the hurdles, and be shifted as occasion may require, by placing the back of the troughs to the wind. This will encourage the lambs to go there both for shelter and food in adverse weather. The dairy cows will now have plenty of grass upon all well-managed pastures and parklands, but they should not be allowed to remain on the meadows at night, either in exposed situations or where the land lies below the fog level, but they should lie in the yards or pens at night until after the 1st of May, where some of the same kind of winter provender as they have been receiving may be continued, especially if pulped mangold, hay and straw chaff, with cake or meal in admixture has

been given. Young stock, both steers and heifers, but especially the latter, should be accommodated with night layers in yards for some little time, as all young cattle are subject to be attacked with the deadly disease of quarter ill, and some of those which are the highest fed with artificial feeding stuffs are frequently the most subject to this complaint. It is therefore a matter of importance that they lie dry and sheltered at night time. Farm horses should have green fodder as soon as any can be obtained. Rye will answer cut into chaff with hay or straw, especially if they have been fed with some roots during the past winter.

BREEDING FOWLS—FERTILISATION OF EGGS.

In reply to the request on page 326, I may state that six years ago I possessed two specimens of the old-fashioned Blue Game. Not getting eggs fast enough a friend presented me with a hen of the same colour and breed in full lay, which had been running with a Buff Cochinchina. The two first eggs she laid were sent into the kitchen, the third and subsequent eggs we set. Every egg hatched out, and only one betrayed the cross, now in my possession. The remainder were Blue Game, good in style and colour.—J. D. HEATHER, *Retford*.

THE POULTRY CLUB.

A COMMITTEE meeting of the Poultry Club was held last week at the Charing Cross Hotel; present the Hon. and Rev. F. G. Dutton (President), T. C. Burnell, the Rev. J. D. Peake, and O. E. Cresswell (Hon. Sec.). The Rev. H. R. Peel, though in London, abstained from attending the meeting lest the Committee might seem to be biased in the consideration of Miss Arnold's complaints about the Hemel Hempstead Incubator Tournament.

The voting papers were first examined to verify the election of Vice-President, Hon. Secretary, and four Committeemen, whose names have already been announced. Several members had sent in blank polling papers signed, with a request to the Hon. Sec. to give their votes as he pleased, but the Secretary did not think well to comply with the request. The votes were—Hon. and Rev. A. Baillie Hamilton (Vice President), fifty; Mr. O. E. Cresswell (Hon. Sec.), fifty-five. The six members who had most votes as Committeemen were Messrs. T. C. Burnell, fifty; R. A. Boissier, thirty-nine; A. Darby, thirty-nine; S. Matthew, twenty-nine; A. Comyns, fourteen; R. B. Wood, eight. The four first gentlemen were therefore found to be elected.

The accounts of the Club for 1879 were then considered, and showed a balance of £129 12s. 6d. in the Treasurer's hands on Dec. 31st. The Hon. Sec. complained that many members and associate members paid their subscriptions at the end instead of the beginning of the year, which gave much unnecessary trouble and confused the accounts.

The following were then elected members:—W. W. Kettlewell, East Harptree, Bristol; W. O. Hodges, 17, Girdler's Road, West Kensington; G. M. Bond, Alrewas House, Ashbourne, Derbyshire; and the following associate members:—Mr. G. Milman, Martin's Herne, Bracknell, Berks; Geo. Simpson, Mayfield House, Ashbourne.

A long paper was then read drawn up by the Rev. H. R. Peel on behalf of the Committee of the Hemel Hempstead Incubator Tournament. Many original documents were appended to it, and it was shown that the incubator contest was entirely separate from the Poultry Show, held under its own rules, and therefore not under the rules of the Poultry Club. After full consideration of the question the Committee resolved that "The statement by Mr. Peel, which has been read, appears to the Committee a complete refutation of Miss Arnold's charges against the managers of the Hemel Hempstead incubator contest, but before proceeding further they decide to submit a copy of it to Miss Arnold in case she should have any observation to make thereon."

Various letters were then read from Committees of shows who wish to put themselves under the Club and to receive some aid from it. The Committee appointed a Sub-Committee to consider all such applications, and named for it (subject to their being willing to act) A. Darby, E. Pritchard, and Rev. W. Serjeantson.

Several letters of thanks to the Honorary Secretary were read from members who had received redress and payment of prizes, &c., through the intervention of the Club; among them one from Mr. R. Garner, who had recovered payment for an incubator long due.

Letters containing various suggestions were read from Messrs. Hayne, A. Comyns, E. H. Morgan, and S. S. Scott. A complaint was presented from Mrs. Forsyth Grant that she had not received her prize money from the last Crystal Palace Show, and the Hon. Sec. was instructed to write to the Secretary of that Show.

The President gave notice that at the next General Meeting of the Club he would move—

A. That two members be added to the Committee, to be elected by the officers and Committee.

B. That the rule be repealed according to which a copy of the

Club's annual report is sent to every exhibitor at the last Crystal Palace and Birmingham Shows.

VARIETIES.

We are informed that the Thorne Agricultural Society will hold their annual Exhibition on Wednesday, the 16th of June. All inquiries should be addressed to the Secretary, Mr. C. Haycroft, Thorne.

— **THE WHEAT CROP AND THIN SOWING.**—Referring to this subject the *Agricultural Gazette* has the following pertinent remarks:—Wheat gathers up and improves, although many fields look painfully patchy and thin in plant. The fear is, that mildew will attack such thin wheat at a later period. On stiff clay soils a thin wheat plant may gradually fill up towards harvest, and yield a good result; but upon thin limestone and chalky soils it is of vital importance to secure a thick, healthy plant, as thin plants are very subject to blight. The fact is altogether overlooked by those who recommend thin sowing irrespective of soil or situation. It, however, teaches us the folly of guiding our practice according to the hasty generalisations of enthusiasts. To save a bushel of seed is certainly a laudable object when it can be done without a corresponding loss of crop; but a bushel saved from the seedlings may mean a shrivelled sample and a depreciated value in the market.

— **POTATOES IN IRELAND.**—The Dungannon Potato Market on last market day was, says the *Daily News* correspondent, so overstocked with supplies that a great reduction in prices took place. It appeared that an immense number of persons had obtained potatoes &c., as seed, under the recent Act of Parliament from the Dungannon Poor Law Guardians, and that a great many of those who had thus obtained the seed on loan actually took the potatoes to market and publicly sold them. Large numbers of the sellers openly admitted that they had enough of seed at home saved from last harvest.

— **CHEDDAR CHEESE.**—The historian Camden, who wrote in the reign of Elizabeth, speaks of Cheddar cheese as being famous in his day, and of such great size as to require two men to set one on a table, from which we may infer that the custom of making up the milk of several farms into one cheese was practised in the sixteenth century as it was about one hundred years ago, for the holdings in the neighbourhood of Cheddar were doubtless then, as now, comparatively small. Here we have the first instance of associated dairying; and it is curious to note that the idea remained undeveloped for more than 250 years, was then put into practical shape by an American; that it has, after great success in the United States and Canada, met with strong adverse prejudice in the country that gave it birth, and at the present time, after a trial of some years, seems to thrive but slowly, and to give scanty proof of the power it possesses to benefit the dairymen of England. Fuller, in the seventeenth century, remarks that "the worst fault of Cheddar cheese is that they are so few and so dear, hardly to be met with save at some rich man's table." These facts, gleaned from the writings of two well-known authors, tell us all we can now learn of the early history of the cheese and its fame.—(From "*Dairy Farming*," by Professor Sheldon, for April.)

— **APPLICATION OF FERTILISERS.**—In a lecture recently delivered at the Maidstone Farmers' Club Dr. Voelcker, in alluding to manures, stated that nothing like the fertilising value put into land in the shape of farmyard manure was recovered; indeed as much as 40 per cent. was lost, and an investigation of the drainage waters of a permanent wheat field disclosed the fact that a very large proportion of the valuable portion of the dung passed away with them. The same, too, had been proved to be the case with artificial manures, such as nitrate of soda, sulphate of ammonia, and guano. But the waste was especially noticeable in the case of farmyard manure, and he had therefore drawn the following conclusions: First, that the agriculturists should use only those artificial manures which gave a profit at once, and second that the quantity to be used and the period of application should be a matter of careful study. That opened up a very wide field for inquiry. For instance, should they apply nitrate of soda to their corn crops in one or two lots? as it was very discouraging to find shortly after it had been used, a heavy rainfall having supervened, that the fertilising value was running out of the drains; and therefore it was suggested that the manure should be applied in two doses instead of one, because there was less chance of the greater portion being thrown away.

— **FEEDING CATTLE.**—The authority above quoted remarked that he had experimented with eight bullocks, four being fed upon linseed cake supplemented with turnips and wheat chaff, and four upon decorticated cotton cake and maize meal supplemented in the same manner as the linseed cake. In nine weeks four bullocks consumed 18 cwt. 8 qrs. 24 lbs. of decorticated cotton cake, 19 cwt. 1 qr. 20 lbs. of maize meal, 16 cwt. 8 qrs. 4 lbs. of wheat chaff, 10 cwt. of white turnips, and 4 tons 7 cwt. 2 lbs. of Swede turnips. The second lot of bullocks had the same quantity of roots and chaff, and in addition 1 ton 14 cwt. 1 qr. 5 lbs. of

linseed cake. What was the result? The bullocks fed on the mixture of decorticated cotton cake and maize meal made an increase of 5 cwt. 2 qrs. 24 lbs. in weight, equal to 2½ lbs. each per day, while those which had the linseed cake gained very little less—viz., 5 cwt. 2 qrs. 17 lbs. But the difference was in the expense. The cotton cake, taking the market price at £7 15s., cost £7 6s. 10d.; and maize meal, £8 12s. market price, cost £6 8s. 8d. The linseed cake, however, cost £16 5s. 10d. calculating the very moderate price it was sold for in 1878 (£9 10s.), and thus there was a balance in favour of the cotton cake and maize meal of £2 10s. 4d.

SEASONABLE NOTE ON FEEDING BEES.

THE cold and dry wind which is now with us makes the feeding of bees with very thin syrup a necessity, for if it be neglected the scarcity of water, which is required in considerable quantity during brood-raising, will send numbers from the hive seeking it, and of these the greater part will never return. Feeding with thin syrup during the day will be found to keep the bees quiet and at home, while their brood-raising will receive no check, a matter which at this particular season has more to do with profit than the majority of bee-keepers are aware. From 1 lb. to 2 lbs. of sugar with a quart of water will not be at all too thin.—F. CHESHIRE, *Avenue House, Acton, W.*

BEE-KEEPING MADE EASY.—No. 4.

SUMMER TREATMENT.

THE activity of bees in summer weather is most remarkable. They have much necessary work to do, and, if the term is allowable, much to think about. The swarming of bees and supering of hives begin, in good seasons, in May. As warm weather facilitates brood-rearing, bees spread themselves over as much comb and brood as they can cover, and thus great additions to the populations of hives are made. If honey is stored up at the same time hives become rapidly full of bees, often overflowing. The storing-up of honey contracts the space for bees, and drives them nearer the doors or outside the doors in clusters. But clustering outside is not a certain indication that bees will swarm soon, for they have been known to cluster about the doors for weeks and months and never swarm at all. This clustering outside is, however, a sign that the bees need more room. The appearance of drones is not a safe guide as to the readiness of the bees for swarming. Generally speaking bees before swarming fill their combs with brood from side to side of the hive and from top to bottom, and when the brood thus extended is sealed over to the points of the combs the bees in most cases are ready or nearly ready for swarming. The heat and noise of hives rise and fall with the tide of honey, and therefore are untrustworthy guides in this matter. The bees of large hives seldom cluster outside before swarming. I often examine my hives by turning them up, first giving them a few puffs of smoke from fustian rags to keep the bees from stinging. On blowing smoke into a hive fully ripe for swarming, the bees are driven from the door a little way, but on lifting the hive off the board we find a great many bees on the board, and many fall from the combs on to the boards while the hive is being turned up. This sure and certain sign of ripeness will not be so evident if the examination be made while the bees are at work in the fields. Experience after all is the best teacher. Eggs set in royal cells indicate that the bees are preparing for swarming and mean to send off a colony with the old queen as soon as convenient—in less than a week, weather permitting.

As soon as the bees are ready I take swarms from them artificially. The work is easily and speedily done, indeed I have not had one natural first swarm for ten years. I would not be bothered with bees if I had to waste time in waiting and watching for them swarming. My mode of artificial swarming is so like Nature and answers so well that I heartily and confidently recommend it to those who cannot afford time to watch their bees. It can be done at any time of the day, morning, noon, or evening, but evening is the best time. The hive is first fumigated with smoke from old fustian or corduroy, then turned up and placed on its crown a few yards from its stand. The hive to receive the swarm (previously prepared for it) is placed on and over the inverted hive, and a table cloth is rolled round the junction of the two to keep the bees inside. By drumming on the bottom hive for four minutes a swarm is driven into the empty one, the two are separated and placed right and left of the old stand. If there is space enough on each side of the old stand I would put them 4 or 6 yards asunder; if not, the same number of feet. All may be done in five or six minutes, and done satisfactorily if the queen go with the swarm. And it rarely happens that the queen does not go with the swarm thus driven. If the queen is not with the swarm the bees will go to the old hive, and nothing is lost but the labour. As most of our hives are sent and kept from home during the summer, I endeavour to see that the queens are with the swarms before we leave them. Thus there is no fear of losing swarms or having again to go through the artificial process now described. I turn up the swarm hive and look for the queen

amongst the bees. She is often seen in less than two minutes, and sometimes ten minutes are spent in finding her. Beginners should not attempt to look for the queens unless their faces are veiled and their fears quelled.

I am not the inventor of this artificial process. My father had it from Bonner I fancy, and practised it for forty years, and I have followed the same practice for forty years since. I consider that it is incomparably the best system of artificial swarming for all kinds of hives. With hives in my own garden I can swarm six in an hour without hurry or fatigue. This work then is easy enough. Bonner and my father, I think, never tried the artificial process with second swarms. The queens in second swarms are young, and apt to fly and be lost in the artificial process. This is well known by experienced bee-keepers; nevertheless I adopt the artificial process with second swarms with some modification. Instead of driving queens and bees up together, I cut out the royal cells containing the piping or barking queens, and then drive up bees enough to form swarms, place the mother and swarm hives where they have to stand, then give each a young queen. I simply take the lids from the royal cells and see the queens run into the hive. This system is perhaps my own, but I am glad to say it is simple, easily done, and answers well.—A. PETTIGREW.

METAL RUNNERS TO FRAME HIVES.

THE frame bar which Mr. Cheshire, on page 807, says he condemned when it was illustrated in the "British Bee Journal" (October, 1878), is identical with that now in the Fuggle hive which Mr. Cheshire so highly commended in your Journal on sundry occasions last year. The improved frame, which Mr. Cheshire says he invented and gave me a drawing of at the time (1878), and which, he says, I have "made from then till now without any change," never appeared at all until 1876 at the Alexandra Palace Show, as published records will show. I had been making a wide-ended frame bar for some time previous to 1878, and the idea which Mr. Cheshire professes to have originated was obtained by me from an Italian hive shown by M. Sartori at the English International Exhibition, 1878, and Mr. Cheshire got his idea of zinc runners at the same time and place from the hive of Messrs. Neighbour of Regent Street. The Italian hive I purchased, and afterwards presented it to Mr. Cowan of Horsham for his museum, where it is now. My abandoned frame bar (now the Fuggle) had projections on each side of both ends, where it had a 1½-inch bearing on its under side. This Mr. Cheshire considers "an insufficiency to give steadiness," yet his own frames have barely an inch of under surface to rest on. When I made the wide-ended frame, now the Fuggle, Mr. Cheshire described my hive as of "a most admirable and original form, which deserves to be fully tried in every intelligently conducted apiary;" and further, "The arrangement of your top bars coming directly against the roof imitates Nature, best maintains temperature, and admits of being more easily and advantageously ventilated than the usual form in bar-frame hives." This was written in March, 1874, and published in April following, fully six months after Mr. Cheshire says he walked three miles to my home to show me his invention, which he asserts I approved and have ever since utilised without change. Mr. Cheshire may have invented an improved frame bar, but he did not mention it to me nor did he give me any ideas on the subject. He has frequently visited my house, and my idea of improving the wide-ended frame was often a subject of conversation, but I did not adopt it because of the waste in the wood, which it then seemed impossible to avoid without considerable labour in patching. Mr. Cheshire suggested a means of saving material in cutting out the frame bar, but it was not adopted because it was impracticable. Mr. Cheshire says I adopted his invention in 1878 (October), and that I have used it ever since without change. How was it, then, that it did not appear in either his hive or mine at the Crystal Palace first Show in 1874 or in that of 1876, and that it was never heard of until the Alexandra Palace Show of 1876? If Mr. Cheshire invented the frame bar in question it is somewhat singular that he has not alluded to the circumstance in any of his writings during the past seven years, and only now so very unhandsonably to my disparagement.—C. N. ABBOTT, Fairlawn, Southall.

OUR LETTER BOX.

FOWLS DYING (T. Barton).—Their diseased livers are probably caused by overfeeding. Give them no animal food, more green food, pollard mash, and dissolve a little green vitriol (sulphate of iron) in their drinking water.

PREBANT FOWLS (G. D. and Others).—We do not know where eggs of this breed are to be obtained; those who have them for disposal should advertise them, as we have many inquiries.

ILL-FLAVOURED BUTTER (J. W. C. and Others).—This may arise from a variety of causes, any one of which may prejudice the flavour of the article. The food being hay and cabbage leaves, the hay may be bad, as much of it is of last year's sowing; the leaves of cabbage may be in a state of partial decay; and at this period of the year the greens, although fresh and sound, will often affect the flavour. It frequently happens when men or lads are the milkers instead of women that they are not so cleanly, and their hands,

unless washed before milking, may injure and taint the milk. Some cows have the habit of lying down on the dung, hence the necessity for washing the udder before milking. Some years ago, when we undertook the agency of an estate and home farm, we had laid before us a complaint that the butter was always strong; we at once examined the floor of the cow-stalls, which was of brick, and although carefully washed down twice a day, could never be quite free from the effluvia in the stalls caused by the absorption of urine by the bricks, and constantly giving off ammoniacal vapour. We had the brick floors taken up and replaced by earth 18 inches in depth. After this we never had any complaint of the butter being strong; for it is well known that foul air affects the food of the animals and also the milk during the time of milking. We have occasionally in the May month found the butter tainted and strong in flavour when the buttercups were in bloom, also where certain noxious weeds were eaten by the cows. Our plan was to cut off with the scythe the buttercup blossom and take up the noxious weeds. Prickly Comfrey when grown slowly is bitter and gives to the milk and butter an unpleasant taste. The more quickly this forage plant is grown the sweeter it is. Our remedy for the purifying of milk was to place a lump of nitre (saltpetre) about the size of a walnut in the bucket and milk on to it. This will effectually purify and prevent strong taint when arising from such like causes. Heaps of heating and reeking dung in the yards have a bad effect either at milking time or when the dairy house or room is too near the yard. Perfect cleanliness and the correct method of making the butter is also one of the great essentials, but more especially is it necessary to have the cream converted into butter every other day, particularly in the summer months. We know of no way by which the strong flavour in butter can be removed.

DRONES IN APRIL (Young Bee-keeper).—The "several drones" noticed by you on the 24th in your strong stock are the best possible sign of prosperity. Look out for a May swarm, perhaps an early one. How early depends upon a variety of circumstances; but as your stock is a bar-framer, why not examine its condition on a warm day in early May? If you find several sealed-up royal cells you may look for a swarm at any time.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.				IN THE DAY.					
	Barom. ter at Sea and Sea Level	Hygrometer.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature.		Rain.
		Dry.	Wet.			Max.	Min.	In sun.	On grass.	
1880.	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	In.
April.										
Sun. 18.	30.035	51.0	45.1	S.	43.2	61.3	41.8	108.3	37.3	—
Mo. 19.	29.934	60.5	51.4	S.	47.8	67.4	52.1	119.0	47.5	0.200
Tu. 20.	29.856	50.7	49.0	W.	49.3	65.5	47.8	116.0	45.1	0.018
We. 21.	30.004	54.0	47.2	W.	49.0	69.7	41.8	108.3	35.9	—
Th. 22.	29.937	51.8	47.4	S.W.	48.8	61.7	47.2	113.1	42.3	0.010
Fri. 23.	30.064	53.0	49.0	S.W.	48.6	62.4	38.4	119.0	31.9	—
Sat. 24.	30.030	54.5	50.0	S.W.	49.1	69.5	43.1	100.1	41.5	—
Means.	29.976	53.7	48.4		48.4	62.5	41.5	111.8	42.3	0.238

REMARKS.

- 18th.—Fine and sunny with gusty wind; moonlight evening.
19th.—Very fine bright day, and much warmer.
20th.—Heavy rain in early morning, fine with bright sun from 9 A.M. to 2 P.M., afterwards shower.
21st.—Fine day, cool wind, occasionally overcast.
22nd.—Fair throughout, but often cloudy.
23rd.—Morning overcast and dull, afternoon fine and bright; lunar halo at 9 P.M.
24th.—Fine, bright, and pleasant day.
A fine week, and temperature about 8° higher than in the previous one.—G. J. SYMONS.

COVENT GARDEN MARKET.—APRIL 26.

THERE has been a slightly better demand during the week, more particularly among best goods, but with an increased supply Grapes are somewhat lower.

FRUIT.

	s.	d.	s.	d.		s.	d.	s.	d.
Apples.....	½	steve	2	6 to 4	Nectarines	dozen	0	0 to 0	6
Apricots.....	dozen	0	0	0	Oranges	½	100	4	0 to 12
Cherries.....	box	0	0	0	Peaches	dozen	0	0	0
Chestnuts.....	bushel	12	0	10	Pears, kitchen..	dozen	0	0	0
Figs.....	dozen	10	0	12	Dessert.....	dozen	0	0	0
Fibers.....	½ lb.	0	0	0	Pine Apples.....	½ lb.	1	0	0
Gobs.....	½ lb.	0	0	1	Piums.....	½ steve	0	0	0
Gooseberries..	½ steve	0	0	0	Raspberries.....	½ lb.	0	0	0
Grapes, hothouse	½ lb.	5	0	0	Strawberries....	½ oz.	0	4	0
Lemons.....	½ lb.	0	6	10	Walnuts.....	bushel	0	0	0
Melons.....	each	10	0	12	ditto.....	½	100	0	0

VEGETABLES.

	s.	d.	s.	d.		s.	d.	s.	d.
Artichokes.....	dozen	2	0 to 0	0	Mushrooms	pottle	1	0 to 1	0
Asparagus.....	bundle	1	6	5	Mustard & Cress	punnet	0	2	0
Beans, Kidney..	½	100	1	0	Onions.....	bushel	8	6	0
Beet, Red.....	dozen	1	0	2	Pickling.....	quart	0	0	0
Broccoli.....	bundle	0	9	1	Parsley..... doz.	bunches	6	0	0
Brussels Sprouts	½ steve	0	0	0	Parsnips.....	dozen	1	0	0
Cabbage.....	dozen	1	6	2	Peas.....	quart	0	0	0
Carrots.....	bunch	0	4	0	Potatoes.....	bushel	3	0	0
Capeions.....	½ lb.	1	0	0	Kidney.....	bushel	4	0	0
Cauliflowers.....	dozen	0	9	2	Radishes..... doz.	bunches	1	6	0
Celery.....	bundle	1	6	2	Rhubarb.....	bundle	0	4	0
Coleworts..... doz.	bunches	2	0	4	Salsify.....	bundle	1	0	0
Cucumbers.....	each	0	4	0	Scazoners.....	bundle	1	6	0
Endive.....	dozen	1	0	2	Seakale.....	basket	2	0	0
Fennel.....	bunch	0	3	0	Shallots.....	½ lb.	0	0	0
Garlic.....	½ lb.	0	6	0	Spinach.....	bushel	3	0	0
Herbs.....	bunch	0	2	0	Turnips.....	bunch	0	4	0
Leeks.....	bunch	0	3	0	Vegetable Marrows	each	0	0	0

WEEKLY CALENDAR.

Day of Month	Day of Week	MAY 6—12, 1880.	Average Temperature near London.			Sun Rises.		Sun Sets.		Moon Rises.		Moon Sets.		Moon's Age.		Clock after Sun.	Day of Year.
			Day.	Night.	Mean.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	Days.	m. s.		
6	TH	Linnean Society at 8 P.M.	62.3	35.5	50.4	4 24	7 29	2 51	4 56	27	3 34	127					
7	F		60.3	39.4	49.8	4 22	7 31	3 9	6 6	28	3 38	128					
8	S	Royal Botanic Society at 3.45 P.M.	64.8	40.7	52.7	4 20	7 32	3 30	7 15	29	3 41	129					
9	SUN	SUNDAY AFTER ASCENSION.	66.0	42.3	54.1	4 19	7 34	3 56	8 23	30	3 44	130					
10	M		65.7	41.0	53.4	4 17	7 35	4 28	9 22	1	3 46	131					
11	TU	Royal Horticultural Society—Fruit and Floral Com.	66.2	42.3	54.3	4 15	7 38	5 9	10 16	2	3 48	132					
12	W	Society of Arts at 8 P.M. [mittes at 11 A.M.]	67.0	42.7	54.9	4 14	7 40	5 58	10 59	3	3 49	133					

From observations taken near London during forty-three years, the average day temperature of the week is 64.6°; and its night temperature 41.1°.

SHADING CAMELLIAS.



SOME cultivators have excellent reasons for growing Camellias without shade, and Mr. Muir is one of them; but while he admits that "shading may do good in some cases," he is yet "strongly inclined to think it would be a decided advantage never to shade" the plants. As the subject is rather an important one, it may be well to state under what circumstances Camellias will endure full sunshine without injury, and under what conditions they will not.

First of all, it is observable that when the shrubs are growing healthily in the open air the foliage is seldom scorched. Even in the sunny land of Italy they do not receive injury in this respect any more than in the south of England and in salubrious districts in Wales. When planted out in congenial soil the root-action is vigorous, and the foliage is unusually stout and leathery. The moisture supplied by the unrestricted roots is sufficient for all the demands of the plants and the sun. There is no check by excessive transpiration, and consequently no scorching. When the shrubs are growing in borders under glass and have abundance of air and water, and the glass is of good quality, the foliage is seldom seriously injured. But if ventilation is insufficient, or in other words, if the growth is made early in the season when the weather is too cold for a great influx of air, or if the border becomes too dry so that the growths flag, or if there are lenses in the glass, as is frequently the case, then scorching almost inevitably follows.

I have seen Camellias growing in borders under glass in Scotland, in the south and west of England, also in the Royal Gardens, Frogmore, and there was practically no scorching, yet no shading was employed. The shrubs were very healthy, had abundant roots to absorb all the moisture required, and not being forced they had practically as much air as if they were growing outside. In the districts referred to the air is generally moist, and evaporation is less than in drier localities, except at Frogmore, which is not remarkable for a moist atmosphere, but that of the Camellia house is made so by artificial means; an intelligent system of culture is pursued, and the result is success.

In the drier districts of England it is found advisable to shade slightly even if the shrubs are planted out and are not forced into early growth. At Waltham Cross Mr. William Paul has a remarkably fine collection of healthy plants, nearly all in pots and tubs. The glass is not only clouded, but the floors and paths of the house are constantly moist during the growing season, almost like a puddle at times, and no plants can be in better condition as to health, and they mature the wood and flower most freely. In Messrs. Veitch's nursery at Chelsea there are grand specimens both planted out and in tubs, and there the glass is clouded, and except after a summerless season like the last there is a fine display of bloom. In Mr. Williams' nursery at Holloway the plants in pots are also most healthy, glossy, and floriferous, and they are not grown under bright clear

glass. In the Belgian nurseries where Camellias are grown so largely shade is afforded them; and for the purpose of providing it in summer when the plants are placed in the open air, close rows of Lombardy Poplars have been planted at sufficiently wide intervals that they cast a deep broad shadow across the spaces between the rows, and thus the Camellias there arranged have shade without drip, and they are watered most copiously. The same plan is adopted in Mr. Turner's nurseries at Slough, and the plants in all these places evidently enjoy the shade afforded them. I could also instance many private gardens where Camellias are in the most satisfactory condition as growing in the shade afforded by Vines and Peach trees, and it is difficult to imagine that the plants would be in the same healthy state were they exposed to the full influence of the sun.

If slight shade is advantageous at the places named, and it certainly appears to be when the plants are healthy and root-action strong, how much more is it required in many other places where, as is unquestionably the case, the root-action of potted plants is far from vigorous, and cannot supply the moisture commensurate with the evaporation from the foliage. It is in those cases where I think it would be a disadvantage rather than an advantage "never to shade," for a check in the flow of moisture from the roots through the plants to the air inevitably results in scorching. It may be fairly urged that such plants are not in good condition, or are not well managed. Granted; but we must remember there are thousands of them, and we must take them as they are, and "never to shade" them would not make them better, but worse. But the plants in the instances first cited are really in superior condition, which has been produced by the mode of culture adopted, including judiciously shading them when needed.

That defective root-action—or root-action disproportionate to the size of the plants and the extent of their evaporating surfaces—is conducive to scorching, is clearly shown in the case of large half-starved and stunted old specimens in pots. These if placed in the full sun are sure to have their foliage burnt; but cut the same plants down, removing their heads entirely, and they will break and form foliage more healthy than before, and much less liable to scorching, because the evaporating surface is greatly diminished, and the sap has not to find its sluggish way through the contracted tortuous courses of twisted and stunted branches. There is then sufficient for the purposes of evaporation, and the leaves are the less prone to scorching.

Mr. Muir's term "never to shade," applies to such shrubs as those under his charge, which are healthy and well managed; but not, or at least much less forcibly, to many thousands of others grown in pots over the length and breadth of the land.—J. WRIGHT.

THE question of shading or non-shading of Camellias is doubtless an important one, and both systems should be practically tested under varying conditions before we can safely arrive at a proper decision; and Mr. Muir's remarks on page 331 might mislead many, or cause them not to devote attention to that most useful of winter-flowering plants, because they could not grow them otherwise than in

the shade. The greatest harm in shading results from the excess to which it is carried. If covering is placed upon houses and allowed to remain there until autumn, perhaps through a series of dull days or weeks, then injurious results might follow; but if the blinds are only drawn down when the sun has the most power, and taken up again early in the afternoon, many plants are thereby much benefited, and amongst them Camellias. If Camellias are stationary in large or small conservatories that are kept gay all the year with flowering plants, shading must be resorted to, or the flowers quickly fall and soon lose the bright colour many of them would otherwise possess. Mr. Muir is "strongly inclined to think that shading does more harm than good, and that it would be a decided advantage never to shade Camellias." I ask, Would he allow them to go unshaded when blooming during spring and under the influence of strong sun? The beauty of the flowers would be quickly sacrificed. Would it not, then, be advantageous to shade them under such conditions? I infer that Mr. Muir is writing of fixed or permanent shading, as he says, "To shade them now would very likely result in burnt foliage or stunted growth when the shading was removed." How could this be the case if shading was properly applied?—not too heavy, but something that would admit plenty of light, so that the foliage would be hard before full exposure to the sun was needed, and the wood would be sufficiently ripe to produce good flowers. To prove that Camellias will do well under shade, we have them trained here on the back walls of two early Peach houses, and are densely shaded. They are cut hard back each year when in bloom. They grow luxuriantly, and never fail to set a large number of blooms, their first flowers opening towards the end of September. Again, in a garden that has recently been described in the Journal, and not a great distance from here, are a number of large Camellias in tubs and planted out under the shade of Vines in a lateinery and never moved, yet they do well and bloom profusely. If the wood was not sufficiently ripe for blooming under the conditions mentioned how is it they bloom so abundantly?—WM. BARDNEY.

A FULL CROP OF STRAWBERRIES THE FIRST SEASON AFTER PLANTING.

If what I have been frequently told by amateurs, that Strawberry plants take up too much space and are too long on the ground before bearing a full crop, be the general opinion throughout the country, then it is easily understood why we do not see more Strawberry beds in small gardens; but judging from my experience I am inclined to think that this impression is far from being correct. The Strawberry is one of the most profitable and quickest bearing plants anyone can grow, and few fruits give more satisfaction, especially to amateurs. That a fine bed of Strawberries may be easily secured in less than twelve months after planting, has been abundantly proved.

About ten months ago I layered a number of Black Prince Strawberry runners into 3-inch pots. At the beginning of August, or not nine months ago, these young plants were planted out 1 foot by 18 inches apart on a south border after the Potatoes were taken up. Turning them out of the pots they received no check in planting, and since then they have done very well. They are now in full bloom, and I have drawn a couple of plants from amongst some hundreds and sent them to you to show that we stand a very good chance of the heading of these notes being fully substantiated. Before May is over we shall be gathering plenty of ripe fruit from them, as there is never any danger of Black Prince failing either to produce flowers or to swell the fruit. You can judge from the samples sent that anyone possessing a bed of the same, say 4 feet by 12 feet or so (which is certainly not too large for a small garden) would have a bed of Strawberries that would astonish many.

No other variety of Strawberry does so well with us as Black Prince. It only lacks one quality which many others possess, and that is extreme size of fruit. In every other respect there is no variety of Strawberry can approach it, and those who are not acquainted with it must not infer from my words that it is very small, as many fruit average from sixteen to twenty-four to the pound. Severe frost does not injure it in winter, and rain, cold, or want of sunshine does not prevent it from blooming now and setting and swelling its fruit. I have no object in thus praising it further than to benefit others, as I am sure many who grow other varieties and only have a

few large fruit for a crop might increase their supply six times by growing such a variety as this.—J. MUIR, *Margam*.

[One of the plants had 120 flowers and buds, and the other 136. Many flowers had set when we received the plants on the 26th ult., and the foliage and roots were in the most satisfactory condition.—EDS.]

AURICULAS.

My love for Auriculas commenced with my early years. My mother, an old-fashioned flower lover, having two very fine white-edged flowers and a self, which if in being now would eclipse all I saw on the 20th ult. at South Kensington—such heads of flowers borne on stems the size of a quill I nowhere see now. For years not an Auricula was to be seen except in one old-fashioned garden in the village, during which time I had taken up the culture of the border Polyanthus, and to-day I can rejoice in many finer varieties than those exhibited on Tuesday last. About ten years ago, however, a curate residing in the place visited Messrs. Turner's at Slough, and so struck was he with the beautiful alpinas there that he brought some seed home with him, and in two years his garden was the admiration of all. Having to leave the place he gave away his plants; some came to my lot, and, my old love thus awakened, I have gone on selecting until I have now some splendid flowers, many measuring 2 inches across, and yet no one can say they are coarse.

I do not think that the collections at Kensington were equal to those of last year as regards quality; and some flowers that showed well last year were notably absent this, others that were poor last year were better this. I was somewhat struck with the absence of several white-edged varieties that were shown somewhat plentifully last year, while green-edges seemed in better trim. I could hardly believe that the flower adjudged the premier prize had in reality obtained that high position, as I had vividly in my recollection the magnificent premier flower of last year. But I must say I was delighted with the seedlings. I see in them the promise of some grand flowers in the future, and I think those who are striving to improve the Auricula are not working in vain.

In the laced varieties of Polyanthus there is much yet to be attained. The very best of late years do not equal many of the older flowers. An exception, however, must be made in the seedling shown by Mr. Barlow. It is somewhat curious that the cultivation of both flowers should have sunk to so low an ebb in the south, while our northern friends have evidently never flagged in their zeal. Now that such an impetus has been given in the south during the last three or four years, let us hope that the exertions being put forth for the encouragement of their cultivation will be crowned with success.—COUNTRY BOOKSELLER.

SMALL BIRDS.

I HAVE read some excellent letters at different times in the Journal relative to the injury done by small birds in gardens; and as I have for many years had to contend against the ravages of sparrows, &c., and having had both birds and gardens under notice all my life, I may, perhaps, be allowed to express my opinion on the subject.

It has always seemed to me that the question whether birds do good or harm was approached from two sides—the sentimental and the practical; and without wishing to disparage those who love small birds, I cannot help thinking they have no *locus standi* in a case where direct injury is done to gardeners. It is pretty generally admitted that a very great majority of the sentimentalists have no practical knowledge of ornithology. They are persons who have either no means of observation, or who lack that nice discrimination which is alone the true guide to a right understanding of the habits and life history of birds. They are content to stay at home and read what others, ignorant perhaps as themselves, tell them. To them a bird is a bird: whether it be granivorous or insectivorous, resident or migratory, summer or winter visitor, is unknown to them and they have no wish to inquire. Now this class of persons, knowing nothing of birds by observation, being profoundly ignorant of the law of increase of each species, or of their movements, habits, or migrations, feel themselves bound by a laudable desire to prevent any destruction amongst birds, to write to the newspapers from time to time the most absurd and inaccurate observations of bird life, which to them seems one whole and undivided subject.

How different is the view taken by a real naturalist! To him each bird presents a distinct feature, each has habits peculiar to itself, or rather to its species, each has a distinct mode of life, and each stands related to others and to its surroundings in a manner which requires constant study and careful observation in order to estimate its good and bad qualities, and to form a sound judgment of its place in nature.

A correspondent brought under notice a treatise by a Frenchman (Mons. Thorent Prévost) on the food of small birds. How often has this same treatise been called in to aid the sentimentalists! And what a love this same Frenchman must have had for the little birds he took such a delight in destroying! I wonder if it ever struck him that the food in their crops would be regulated by the district in which they were killed. Chaffinches, for instance, in woods, far removed from cultivated fields and gardens, do not feed on the same food as others which haunt the latter places. And is it necessary that Englishmen who have these birds under their observation daily should have to go over to France to learn what they feed on? And who knows where Mons. Prévost killed his birds? But surely it did not require the slaughter of so many birds all through the year to find out what they fed upon. If, for instance, I see a flock of sparrows fly off a field of ripening grain, I don't want any preparation of their stomachs to tell me what their food is; or when I have sown a bed of radishes and see them coming up all right, and the next time I go round I see several chaffinches fly off the bed and find the whole of my sprouting radishes destroyed, I don't want anyone to tell me the chaffinch's food is moths and butterflies; or when I have beds carefully prepared and sown with Suttons' or Carter's Brussels Sprouts, Broccoli, &c., and I come suddenly upon a flock of greenfinches and chaffinches on the beds, and find all my labour in vain, my seed destroyed, and season lost, then I don't want to know what their food is—in fact I won't hear that it is cockchafer, worms, &c. No, there is no denying the fact, these birds are a great nuisance in gardens and do much injury. I do not object to them anywhere else, but I will not have them in the garden, and if they persist in coming into it to commit mischief they must pay the penalty.

I do not deny that most birds do much good, indeed I know they do more than they usually have credit for, because the good they do is general, and affects no one in particular, and for that reason it frequently goes unnoticed. On the other hand the harm they do is local, and directly affects the grower's interest, so that he sees the mischief at once and takes measures accordingly; for though he is willing perhaps to allow they do some good, he cannot permit them to do him direct injury on that account.

With some kinds of birds such as bullfinches and sparrows it is otherwise; they seldom come into the garden except to commit damage, and I cannot see they do any good that at all compensates for the harm they do. The bullfinches are notoriously destructive pests, and have not one good property in their favour; fortunately they are not very numerous now. But it is the sparrow that is such a pest to gardeners, and I should like to see it as reduced in numbers as the bullfinch. Sparrows never seem at rest in the garden so long as anything remains undestroyed; they are a perfect scourge to those who unfortunately have gardens near large towns. All through the winter they are nibbling off the buds of Red Currants and Gooseberry trees, and in the spring they do an enormous amount of damage by cutting off the Gooseberry flowers. A single sparrow will clear off the entire crop of a large Gooseberry tree by this practice in a very short time, and where sparrows are very numerous I do not know of any means to save the crop.

I do not blame the sentimentalists for trying to save the birds' lives. All I say is, that as they do not understand the subject they have scarcely a right to interfere, especially when it is a question of destruction of other people's property. Surely the gardener—whose interest is so closely bound up in the subject, and whose daily life brings him constantly in contact with the birds and their food—ought to be the best judge.—F. BOYES.

ARCTOTIS ARBORESCENS—which we only know of in the Cambridge Botanic Garden—though less showy than its near relative *A. grandiflora*, is almost equally attractive from the soft glow of its colours. Around the dark centre is a ring of orange, and outside an expanse of pale sulphur yellow. Apart from this difference of colour it is almost precisely the species above referred to, forming a small greenhouse shrub with pin-

natifid leaves silvery beneath. It is a native of South Africa, and has been mistaken for *Cryptostemma calendulaceum* from the same country, which in the flower heads it much resembles.—L.

THE ORIGIN OF THE POLYANTHUS.

It appears according to your correspondent Mr. Dod "that the discussions on this question have generally tended to show that the garden varieties of *Primula* commonly called Polyanthus may be produced from either the Cowslip or the Primrose, or from hybrids between them." I do not know whether such is the case, but I have found the converse take place by experiment. I do not regard the Cowslip and Primrose as distinct species; and without pretending to be a botanist I may say that I agree with Linnaeus that the Cowslip, the Primrose, and Oxlip are different forms of the same flower, and the Polyanthus may be added to the list. Of the truth of this anyone may convince himself by purchasing a packet of Polyanthus seed and raising a large number of seedlings for five or six years, which I did. I can hardly dignify my operations with the name of experiments, for I did not artificially impregnate any of the flowers, but simply grew them in the garden and saved seeds of peculiar forms. The result was that I grew all the varieties above mentioned. It may be suggested that the seedlings should have been grown under glass, and that a bird may have carried a Cowslip seed and dropped it just in the right place, and the same remark may be made as to the Primrose. With regard to this I may observe that the change did not take place suddenly but through intermediate forms; and with regard to the Primrose, I never produced one without passing through the Polyanthus stage. I raised several primrose-coloured—i.e., yellow—Polyanthuses, but have a difficulty in keeping them; there appears little fixity of type. After a year or two they throw up a few flowers without any footstalk, and in another year or two change altogether to Primroses—at least such has been the case with several of those I have raised. The other coloured plants appear much more constant to the Polyanthus forms, but some of them have a tendency to vary. I enclose Polyanthuses from three different plants, and Primroses from the same plant as the largest Polyanthus.—AMATEUR, Cirencester.

MR. DOD would do a good service both to horticultural and botanical science if he would determine by accurate experiment whether the Primrose and Cowslip are really capable of interbreeding. I have not been able after many trials to effect the cross myself. There would appear to be several well marked and distinct wild forms of the Primrose. The especial one, which is at the bottom of the Oxlip mystery, when in its small blossomed state so completely mimics a large Cowslip as to deceive, or at least confuse, an ordinary observer. It is this plant which has given rise to the (as I think) mistaken notion that the Primrose, Cowslip, and Polyanthus will all come from one pinch of seed; of course I consider the *P. elatior* of Jacquin out of court in the consideration of this matter. I may perhaps be excused for remarking that any experimenter who is minded to work at this subject must remember that neither strong assertions nor loose evidence will in the least degree forward the subject.—R. TREVOR CLARKE.

WARNING RELATIVE TO DYNAMITE.

THE description in last week's Journal of the blasting of tree roots with dynamite at Mentmore will no doubt have interested many of your readers, and will possibly induce some to try for themselves an operation which your correspondent represents as so simple and safe. He has perhaps never seen dynamite behave otherwise than well, and was not informed by its vendors that it possesses peculiarities which make it far from an innocent substance fit to be entrusted to any inexperienced hands, otherwise I think he would have mentioned the following points, which should be known by all who employ it:—1st, Dynamite, or rather the nitro-glycerine contained in it, freezes at about 43° Fahr., and it is not safe to use it in that condition. 2ndly, Thawing it should be done at a temperature not exceeding that of boiling water; neglect in this respect has caused disastrous explosions. A favourite plan with miners is to put the frozen charges into their breeches pockets. 3rdly, Keeping it in the damp should be avoided; moisture tends to make the oily nitro-glycerine exude, and this in the free state is highly dangerous.

But in supplementing your account with this brief warning I have no wish to take away the character of what is undoubtedly a most valuable explosive, more especially for blasting in wet ground or under water. For the latter purpose I have used some tons of it, happily without accident; but I should never allow it either to be kept or employed except under an experienced eye. One safeguard, indeed, against its adoption for blasting purposes is the difficulty of getting it in most places, for railway companies will not carry it at any price.—A. L. N.

AN EXHIBITION OF PLANTS AT TURNHAM GREEN.

A FLOWER SHOW at Turnham Green is invested with more than ordinary interest to the metropolitan horticulturists, for it is suggestive of those grand old days at Chiswick, when the Horticultural Society held such extensive and attractive displays that they required special numbers of the *Cottage Gardener* to do them justice. Since those days the district with which so many memories are connected, as that where the first stimulus was given to the public exhibition of plants, has been without any local show, and in this respect is behind many other places in the immediate neighbourhood. Now, however, something has at last been done to awaken the horticultural energies of the residents, and the success of the effort will no doubt lead to results of a permanent character. The Exhibition held on Thursday last was well attended by visitors and exhibitors, but the competition was not very keen, and the attractions of the display were chiefly due to the handsome groups of plants from the London nurserymen and several gentlemen in the neighbourhood. The organisers of the Show had a charitable object in view, for all funds that remain after deducting expenses are to be devoted to the West London Hospital, and in pursuance of this benevolent design they were favoured by the patronage of the Royal Horticultural Society and several influential gentlemen. The Show was held in the Vestry Hall, closely adjoining the Society's Gardens, where visitors to the Exhibition enjoyed the privilege of promenading, and it is doubtful which contributed most to the general satisfaction.

With regard to the arrangement of the exhibits and the general management it is well known that where Mr. Barron superintends the most fastidious are satisfied, and it is almost unnecessary to state that notwithstanding the formality of the building the effect was extremely bright and pleasing. The hall is a long quadrangle with a recess at one end; on each side extended tables covered with green cloth, and on these the various groups were arranged, the central table being occupied by the smaller plants in the competition classes and the cut flowers. The recess above alluded to was filled with remarkably handsome specimen Palms from Gunnersbury House, forming an admirable background to a beautiful semicircular group of standard Roses and Japanese Maples from Messrs. Veitch & Sons of Chelsea, one of the chief features of the Exhibition. At the opposite end of the hall was a pretty group of ornamental foliage plants from Mr. Herbet's nursery, Kew Road, which included a number of Palms. A fine specimen *Scaevola elegans* was very attractive, occupying the centre of the group; plants of *Ophiopogon Jaburan*, pans of *Tradescantia multicolor*, *Selaginellas*, *Panicums*, and others being very lightly and pleasingly arranged. The novelty of the group, however, consisted in many of the plants being shown in neat and artistically made cane baskets, some of them not more than 2 inches deep, and they were greatly admired. The Marquis of Bute, Chiswick House (gardener, Mr. May), contributed four small groups for the angles of the hall, consisting of some very fine *Richardias*, *Spiræas*, *Ferns*, *Primroses*, and a box of *Camellias* and *Pancratiums*.

As we have already indicated the nurserymen's collections were both extensive and beautiful, equal to those exhibited at many of the large London shows. Next in point of attractiveness to Messrs. Veitch's Roses was a group of Orchids and miscellaneous plants contributed by Mr. B. S. Williams of Upper Holloway. Among the numerous handsome plants especially noticeable were a good variety of *Odontoglossum cirrhosum*, *Aërides Fieldingii*, *Adiantum Williamsi*, good *Gloxinias*, and the charming hybrid *Azalea Princess Maude*. A large and imposing group was sent by the General Horticultural Company, comprising examples of Mr. Bause's handsome *Dracenas*, fine plants of the drooping Maidenhair Fern *Adiantum Bausei*, *Azalea Veitchi gracillima*, *Yucca filamentosa variegata*, and many others, which were considerably enlivened by specimens of the brilliantly coloured *Scutellaria Mocciniana*. Mr. J. Aldous, florist, South Kensington, exhibited a pleasing group in which *Hydrangeas*, *Chrysanthemum frutescens*, and *Grevilleas* predominated, the margin being composed of *Forget-me-nots* and *Selaginellas* in rows. Messrs. Hooper and Co., Covent Garden, staged a large and graceful group of *Crotons*, *Dracenas* and *Palms*, with a few flowering plants. Messrs. Osborn & Sons, Fulham, had a similar group, but tastefully margined with small *Palms* and *Adiantums*. Messrs. Paul & Son, The Old Nurseries, Cheshunt, sent two boxes

of remarkably fresh and beautiful *Roses*, which awakened the admiration of all the visitors; a bloom of the new Tea *Madame Lambert*, that promises to be a fine exhibition variety, was the finest we have seen. Messrs. John Standish & Co., Ascot, exhibited forty large flowers of *Gardenia intermedia*, similar in beauty to those previously shown at Kensington. The only other group that was not entered in competition was the one exhibited by Mr. J. Roberts, gardener to Baron Rothschild, Gunnersbury Park, which included a large number of handsome plants arranged with excellent taste. Orchids, Ferns, Lilies of the Valley, *Crotons*, *Caladiums*, and *Anthuriums* were all admirably represented, among the specialties being good specimens of *Pimelea spectabilis* and *Tillandsia Zahnii* in flower, the latter being honoured with a certificate of merit. All the above collections were highly commended by the Judges, and they undoubtedly contributed very largely to the success of the Exhibition.

The schedule enumerated twenty-eight classes, besides several in which special prizes were offered; but in eight or nine there were no entries, and in many of the others there was scarcely any competition. The principal class was that for a group of plants to occupy a space 12 feet by 6 feet. The chief honours were easily won by Mr. Hudson, gardener to H. J. Atkinson, Esq., Gunnersbury House, Acton, with a most tastefully arranged group composed of *Palms*, *Crotons*, *Spiræas*, *Dracenas*, *Ferns*, *Cinerarias*, and Lilies of the Valley disposed in a light informal manner, and margined with *Caladium argyrites* and *Adiantum cuneatum*. The second position was taken by Messrs. W. Fromow & Sons, Turnham Green, with a bright group of *Azaleas*, *Gloxinias*, *Pelargoniums*, and *Palms*. B. Hardy, Esq., Garden House, Chiswick, was the only exhibitor in the class for a smaller group, and obtained the premier prize with a neat collection of flowering and fine-foliage plants. *Azaleas* were not in first-rate condition but generally well flowered, the principal prizes in the two classes being awarded to J. K. Starling, Esq., The Chestnuts, Gunnersbury; C. Bown, Esq., Grosvenor House, and Mr. Hardy. Fine-foliage plants were represented by two collections of six, the magnificent *Palms* from Mr. Hudson that occupied the recess gaining the chief prize; H. Pearks, Esq., Heathfield Cottage, Turnham Green, and Mr. Bown being awarded equal second prizes for *Begonias*, *Caladiums*, and *Dracenas*. The prizes for three specimens of *Spiræa japonica* were obtained by Mr. Starling, B. Lathbury, Esq., Park House, Turnham Green, and Mr. Bown with healthy plants, but not very profusely flowered. Mr. B. Dean, Ealing, was the only exhibitor in the classes for *Auriculas*, *Primroses*, and hardy plants, being awarded the first prize for each collection. Ferns were shown by Messrs. Hudson, Lathbury, and Bown, the prizes being awarded in the order named for very fresh and healthy specimens.

Table decorations and cut flowers were very well represented, the competition in the class for a single stand of flowers being rather close. Equal first prizes were awarded to Mrs. Pearks and Mr. Hudson, the former with a light and pleasing arrangement of *Spiræas*, white and golden *Marguerites*, *Lonicera reticulata aurea*, white and scarlet *Pelargoniums*, *Eucharises*, and white Lilies, with fronds of *Adiantum cuneatum*. There was rather too much yellow in this stand, which was otherwise very tasteful. Mr. Hudson's stand was much brighter, being enlivened by sprays of *Chorosea Chandleri*, double *Jonquils*, *Rose buds*, *Begonia nitida odorata*, and *Cinerarias*. G. H. Jupp, Esq., White Lodge, Gunnersbury, was second with a neat arrangement of *Gloxinias*, Lilies of the Valley, *Roses*, and *Forget-me-nots*. In the other classes for cut flowers and bouquets Mrs. Pearks and Mr. Hudson were the only exhibitors, and divided the prizes. In the class for miscellaneous exhibits groups of plants were exhibited by Messrs. Fromow, Dean, and Montgomery, to whom prizes were awarded; and also to Mrs. Hudson for a handsome arrangement of flowers and stands for table decoration. Several special prizes were offered by gentlemen and ladies of the district, but there were only four entries. Mr. Lathbury gained the first prize, offered by Mrs. G. H. Jupp, for a brace of Cucumbers. Mr. Hudson secured a similar award, offered by Mrs. Pearks, for a hand bouquet, the same exhibitor and Mr. Pearks being placed second and third with six plants for table decoration, the prizes being given by Mr. Aldous.

During the afternoon a larger company assembled in the Royal Horticultural Society's Gardens than has been seen there since the last great Show, more than twenty years ago; and the bright sunny weather rendered the Gardens, now gay with the blossom of fruit trees, extremely enjoyable. The services of the Scots Guards band were obtained by Francis N. Dancer, Esq., and Henry Smith, Esq., who generously subscribed for that purpose.

SEA SAND.—Let no one be deceived by what has lately been written about sea sand. I know the deposit well about which Mr. Muir speaks. It is sea sand, true; but so was the finest Reigate silver sand ages ago. Any sand on the sea beach which is out of reach of all tides, and which has been exposed for a long time to the purifying influences of sun and storm, is good for potting purposes, while that which is got close to the water would certainly destroy tender plants, such as *Alter-*

nantheras, Lobelias, &c., and is almost too strong for surfacing beds of Crocuses and Asparagus.—WITHTOOMER.

CHAPTERS ON INSECTS FOR GARDENERS.—No. 5. NEW SERIES.

THE Ruby-tails, as they are popularly called, constitute the last group of the Entomophaga; the Ichneumons and Gallflies, belonging to the same division of the Hymenopterous order, we have already noticed. These, like their brethren, are stingless, for though one of them if roughly handled may attempt to strike with the ovipositor there are no poison glands attached to it. The leading peculiarity of the Chrysidæ is in the abdomen, the greater number of the segments of which are small and slip one into another like the joints of a telescope. When alarmed a Chrysis insect does what is very unusual amongst flying insects—that is, it forms itself into a ball by turning the abdomen over until the head is covered thereby; the wings, however, still remain visible. This is probably done as a protective measure, and is not merely the result of fear. The size of these Ruby-tails is about one-third of that of the common wasp, but they attract the eye by their brilliant tints of red, golden green, and blue; their restless motions in the summer sunshine also tell of surprising energy lodged in their small bodies. In gardens they are occasional visitors, but in no way hurtful, the larvæ being parasitic in habit, dwelling in the nests that have been formed by the solitary bees and wasps. The female Chrysis discovers these by instinct, and manages to introduce her eggs into the cells of the larger species, not without peril, for there have been cases where the rightful owner has been seen to catch the intruder in the act, the penalty being death or mortal injury. When the young larvæ appear they devour the food that has been stored up by the bee or other species, and finally the rightful owner also, though it has been conjectured that in the struggle the bee grub may sometimes be the conqueror. We have about twenty British species of the Ruby-tails, insects, however, that in hotter countries frequently occur in vast multitudes.

The Aculeata, as forming the second great division of the two that constitute the order before us, are recognisable by the appendage to the abdomen, which, appearing simple to the eye, is really composed to two bristles finely toothed, and which we call a sting; but as there are exceptions to most rules, so here we find that some of the insects have no stings, or abortive ones. The drones of our hives are a familiar example, and amongst the ants again the ordinary workers are mostly stingless, but they discharge an acid fluid from the mouth. Much as we may think the ants differ from the wasps, they are scientifically placed in one subdivision, forming the *Rædones*, the "*Rapacious*" Aculeata. There are ants solitary as well as ants social, though insignificant in number compared with those whose colonies are well known, and discoverable at times within the garden precincts, where their room is common, and it may be rightly, esteemed better than their company. Social ants are at once distinguished from the rest of the order to which they belong by the peculiar form of the first joint of the abdomen, which forms a scale or thickened node. Like the social wasps and bees these ants in their perfect state consist of males, females, and workers; the latter, to the honour of feminine character, are usually regarded as representing an imperfect type of the female insect. The males and females appear on the wing during the summer, but only for a short time. Volumes large and small, and by no means uninteresting, have been written upon the habits of ants—their social arrangements, their dwellings, their modes of foraging, their wars, their slaves, and so on. In this series we can only touch upon such matters concerning them as may be deemed of particular interest to gardeners, and in the briefest way. If we can credit the accounts given us of the proceedings of some species ants might, indeed, claim the sympathy of gardeners as being fellow workers, in one land at least; for it is gravely declared concerning a species found in South America that it sows the seeds of a plant found near its habitations, nurtures the young plants as they grow, duly gathers the ripe crops, and then stores them for its requirements (*vide* "Zool," 7576). Another species is said to plant "shade trees" to answer the purpose of a screen; but at present these statements are received with caution. Marvellous, however, as are the instincts shown by the bees, it is generally allowed that ants surpass even those insects in sagacity, in tenderness towards their young, and in almost ceaseless diligence. Personally an admirer of the ant races, when I had the privilege

of discoursing in this Journal upon the insect friends and foes to horticulture I endeavoured to prove that on the whole they might be regarded favourably, though sometimes guilty of petty misdemeanours. Recent disclosures, I apprehend, are not in their favour, since ants have been detected in the act of wilfully damaging the buds of Roses; doubtless they attack other buds. They have also been found in unpleasant hosts upon young Cabbage plants, and their *penchant* for various fruits is historic.

Yet it is true that ants seize and carry to their nests many grubs, caterpillars, and indeed a variety of insects, while it is possible that they occasionally kill and devour the aphidæ, upon which they are often seen attending so vigilantly for the sake of their saccharine secretion. Then the black ant of our gardens, a very diligent excavator of posts and stumps, is declared by Mr. Wood to be friendly rather than otherwise, because—as it only attacks wood that has begun to perish—the insect thus gives us timely warning that these objects need to be replaced by new ones. The strange mixture of insects that are discoverable in the subterranean nests of various species of ants certainly suggests some singularities in the position they occupy towards other insects, for numerous beetles have been observed not seemingly hostile to ants, also woodlice. With what design they enter or are brought to the nests is open to conjecture. Aphides, mostly of the kinds that feed in parties upon roots or stems, are found, evidently brought there by the ants—perhaps only to be fattened and then devoured, though one naturalist thinks some ants actually breed aphides from the egg state with their own broods for the convenience of having ready supplies of aphid "honeydew." It is difficult



Fig. 50.—Ashy Black Ant (*Formica nigra*) Male, Female, and Worker.

to examine without damaging them the nests of ants that are formed under the earth, but they contain a number of chambers, which are placed in storeys. Communications, of course, are made not by staircases, winding galleries answering best for the habits of the insects. Such architectural contrivances as arches, buttresses, and pillars are observable, and the doors or approaches are always guarded by sentinels told off for the purpose. To a naturalist it seems sad that structures so marvellous should have to be destroyed, yet in some gardens these insects are so abundant as to render the deed quite allowable, and a common plan is to apply boiling water, or preferably gaslime, to the nests that are detected. Blowing them up with gunpowder is another method. When ants swarm upon leaves or branches the application of tobacco water mixed with solution of quassia is very serviceable, and the killing of some of the female winged ants at their time of emergence in July or August is a good precaution. Wool wound about a stem will prevent ants from ascending.

Whether locality has in their case an influence upon habit we cannot say, but those ants that reside in woods or open places are apparently both fiercer and larger than those that frequent gardens. It is supposed that such species as *Formica rufa*, that is commonly found in woods and copests, are deterred from entering gardens rather because they do not yield them suitable materials for nests than from any special dislike to the proximity of man. Another ant that is partial to woods, *Formica fuliginosa*, black in colour but of superior size to the garden black ant, scoops out a hollow in trees, and the strong smell emitted by the insects often warns us when we approach a nest. Combats now and then take place between the natives of different anthills, and it has been particularly noticed that each side carries off the bodies of its slain. The kindness or heroism of this act remains a little doubtful, for it is not certain that the dead are buried. One student of ants inclines to the belief that they are devoured. The brown ant (*F. fusca*) and the yellow ant (*F. flava*) are the usual infesters of the garden or lawn. The latter on sunny days they will cover with numerous "ants' eggs," objects much delighted in by pheasants and partridges. These we may remind the reader are not actually eggs, the real eggs being very minute and never seen without the nest, but the envelope or cocoon in which is enclosed the pupa of the future ant, and the warmth or moisture of which is carefully regulated by the workers. Upon them also falls the entire duty of supplying food to the helpless larvæ or grubs

that precede the pupæ. In our climate ants hibernate, going to the warmest part of the nest until winter has passed. Many die in most seasons, though a sufficiency survives to continue the colony the following year.

The ashy black ant (*Formica nigra*) of our illustration, is a representative species of those ants that are exceedingly diligent, but pacific in habit, for amongst these races colour is indicative of character. The black or dusky species are attacked by their more ferocious relatives of a reddish hue, and the combat ends in the latter bearing off to their own nests the pupæ taken by conquest, which are brought up as workers in a colony to which they are really strangers.

Of the solitary ants we possess only five species in Britain; they form a connective link between the ants and the sand wasps. The male insects are winged and have large eyes; the females are wingless and armed with an effective sting, which is doubtless used to kill their prey. It is presumed that they enter the nests of other insects. Mr. Drewson has taken them in the nests of humble bees. There are no neutrals, but the females from their aspect would be taken for wandering ants of the social division. Dry or sandy fields are the favourite haunts of solitary ants, the most conspicuous species being *Mutilla europæa*, the males having dusky wings with a blue and red body; the females are black and red. In Australia are found many curious kinds of solitary ants, and in North America the scarlet *Mutilla*, a large species, is dreaded because of the virulence of its sting, from the effects of which children have died in a few hours.—J. R. S. C.

MIXED FLOWER BORDERS IN 1879.—No. 5.

MIMULUS, MONARDA, LYCHNIS, THALICTRUM, HEMEROCALLIS.

NOTHING was more characteristic of the wet summer of 1879 in the little roadside gardens in West Cheshire than the conspicuous display of the spotted varieties of the common Monkey Flower, *Mimulus luteus*. In strong wet soils this plant is not only hardy, but requires constant attention to keep it within bounds; but it comes in usefully between spring and summer, and deserves a place. This, however, is more than I feel disposed to say of the common Musk, *M. moschatatus*, which last summer was one of my most troublesome weeds, overrunning everything with its slimy leaves, and spreading with wonderful rapidity. I would warn those whose soil is wet and strong to be careful where they introduce it, as I find it very difficult to eradicate. Harrison's Musk has at least the merit of not being equally hardy, or it might be similarly troublesome. It is a useful plant in its right place. The best of the tribe are *M. cardinalis* with scarlet flowers, and its variety *roseus* with rose-coloured flowers, both hardy, and more liable to be lost from drought in summer than from cold in winter. They were in flower last year from the end of June till November, and deserve a place in the most select gardens.

The old-fashioned Bergamot, *Monarda didyma*, is now seldom seen, even in gardens in which herbaceous borders are allowed. It was very gay last year, and spread luxuriantly both above and below ground. I do not know how it ever disappears when once established, unless for want of dividing and transplanting. There are also white-flowered and purple-flowered *Monardas*, but the scarlet is, I think, the best.

Lychnis chalcedonica made a great show with us last summer, especially the double scarlet variety, which I recommend to every gardener. It is easily increased by cuttings either of the young shoots in early spring or the side shoots 2 or 3 inches long in summer. These strike readily either under glass or in the open border, but in the latter case slugs are troublesome. I have also single and double white varieties. *Lychnis chalcedonica* is a little capricious about soils, and does not do well in very stiff soils. A stock of plants may easily be kept in store, as it increases so easily. There are many other species of *Lychnis*, of which *L. Haageana* is perhaps the finest flower, and should be tried from seed; but it will not succeed everywhere. The double varieties of *L. diurna*, *L. viscaria*, and *L. vespertina*, often called *diocia*, are worth growing. The last-named was very gay through June last year.

The genus *Thalictrum* is large, and may be studied with advantage at Kew, where it has a large bed assigned to it. The foliage is more ornamental than the flowers. No species is more desirable in a garden than the native *T. minus*. Its native habitat is amongst rocks, but it does well anywhere in well-drained open soil. I grow it in quantity for cutting its leaves, which resemble Maidenhair Fern. The young leaves

are best, and by cutting down some of the plants as soon as fall grown a succession is obtained. The plants when large may be divided in autumn, but I generally supply myself with wild plants from the Welsh mountains.

The Day Lilies (*Hemerocallis*) seem to like a wet season, but not too heavy or stiff a soil. The most common, but also the best, *H. flava*, is one of the most fragrant of garden flowers. It comes into bloom early in June, and lasts about a month, though each flower, as the name implies, lasts only for a day. I have never seen it naturalised, though it is said that it may be in suitable soils near ponds. Plants potted in autumn come in usefully in conservatories in April. It is succeeded in the border in July by two larger species, *H. fulva* and *H. disticha*, of both of which there are double varieties, deserving to be ranked amongst the most ornamental plants for large masses. The two species seem to me to be often confused and the names interchanged, and I am unable to explain the distinctions. There are two or three other varieties, the most distinct being one with flowers of the colour and scent of *Apriota*, and dark brown outside, with smaller leaves and more compact in growth than *H. flava*. I believe its name is *H. graminea*, but it certainly appears in catalogues under other names. All the genus bear frequent division, as they spread and increase rapidly.—C. W. DOD.

ROSES AT REGENT'S PARK.

In the Royal Botanic Society's Gardens an exhibition of Roses in pots from the nurseries of Messrs. William Paul & Son, Waltham Cross, was commenced yesterday, and will continue until the 12th inst. About three hundred plants, representing 150 varieties, are arranged in the corridor leading from the conservatory, and they constitute such a display of rich and delicate colours that could scarcely be surpassed. The plants are in excellent health, and indicate the skilful culture which they are well known to obtain at Waltham Cross. The flowers are generally of good form and substance, but in intensity and purity of colour they are most remarkable. Rarely indeed do we see the many beautiful shades of crimson and magenta more finely developed, and the effect produced by the tasteful arrangement of light and dark colours as viewed from one end of the lengthy corridor is strikingly attractive. All the best varieties in commerce are well represented, and an excellent opportunity is afforded to amateurs of judging their respective merits. Such an extensive display as this shows to the best advantage the attractions of the most beautiful Roses, the popularity of which is undiminished by the many other ornamental plants that are annually added to our gardens. Of the newer varieties the handsome *Magna Charta* is in fine condition and bearing enormous flowers; *Duchess of Bedford*, a new Rose of great merit, has superbly coloured blooms; *Countess of Rosebery*, also new, is similarly excellent; *Constantin Tretiakoff*, *Cœur de Lion*, and *St. George*, are all in grand form. The following excellent varieties are also especially noticeable:—*Star of Waltham*, an admirable variety for pot culture; *Auguste Rigotard*, *Capitaine Christy*, *Rubens*, *Madame Faloot*, a beautiful variety quite unrivalled in colour; *Rosy Morn*; *Mlle. Thérèse Levet*, very fine; *Madame Willmore*, fresh and good; *Dr. Andry*, extremely bright in colour; *Duchess of Edinburgh*, well flowered; *Jehan Hopper* in good condition, vigorous; *Innocente Pirola*, a good Rose, somewhat in the style of *Niphotos*, but distinct in colour; *Souvenir d'un Ami*, profusely flowered; and *Baron Bonstettin*, a beautiful variety, well represented. In addition to the Roses in pots, nine boxes of cut blooms were shown, including *Maréchal Niel*, in superb condition. Mr. Paul has provided a treat for lovers of the Rose that will unquestionably be greatly appreciated, and we may expect to hear of the Exhibition being attended by large numbers of visitors. The gardens are also now in the full beauty of spring.

STRUGGLES OF A NEW YORK FLORIST.

At the beginning of the year 1805 ladies first showed a taste for flowers in New York, and in the fall of that year, when the plants needed shifting preparatory to their being placed in the parlour, I was often asked for pots of a handsomer quality or better make than those commonly employed. I was looking round for some other means to support my family, and all at once it came into my mind to paint some of my common flower pots with green varnish paint, thinking it would better suit the taste of the ladies than the common brickbat-coloured ones. I painted two pairs, and exposed them in front of my window. They soon drew attention, and were sold. I painted six pairs; they soon went the same way. Being thus encouraged I continued painting and selling to good advantage. This was in the fall of 1802. One day in the month of April following I observed a man for the first time selling flower plants in the

market. As I carelessly passed along I took a leaf, and rubbing it between my finger and thumb asked him what was the name of it; he answered, "A Geranium." This, as far as I can recollect, was the first time I ever heard that the flower in question was a Geranium, as before this I had no taste for nor paid any attention to plants. I looked a few minutes at the plant, thought it had a pleasant smell, and that it would look well if removed into one of my green flower pots to stand on my counter and thus draw attention.

Observe, I did not purchase this plant with the intention of selling it again, but merely to draw attention to my green pots, and let the people see how well the pots looked when the plant was in them. Next day someone fancied and purchased both plant and pot. The day following I went when the market was nearly over, judging the man would sell cheaper rather than have the trouble of carrying his plants over the river, as he lived at Brooklyn, and in those days there were neither steam nor horse boats; accordingly I purchased two plants, and having sold them I began to think something might be done in this way, and so I continued to go at the close of the market, and always bargained for the unsold plants. The man, finding me a useful customer, would assist me to carry them home, and show me how to shift the plants out of his pots and put them into the green pots if any customer wished it. I soon found by his tongue that he was a Scotchman, and being countrymen we wrought into one another's hands, and thus from having one plant in a short time I had fifty. The thing being a novelty began to draw attention, people carrying their country friends to see the curiosities of the city would step in to see my plants. In some of these visits the strangers would express a wish to have some of these plants, but having so far to go could not carry them. Then they would ask if I had no seed of such plants; then again others would ask for Cabbage, Turnip, or Radish seed, &c. These frequent inquiries at length set me thinking that if I could get seeds I would be able to sell them; but here lay the difficulty. As no one sold seed in New York none of the farmers or gardeners sowed more than they wanted for their own use, there being no market for an overplus. In this dilemma I told my situation to the person from whom I had always bought the plants in the Fly Market. He said he was now raising seeds with the intention of selling them next spring along with his plants in the market, but added that if I would take his seeds he would quit the market and stay at home, and raise plants and seeds for me to sell. A bargain was immediately struck. I purchased his stock of seeds, amounting to fifteen dollars, and thus commenced a business on the 17th of September, 1806, that became the most extensive establishment of the kind in the western world.—G. THORBUEN.—(From the "Secret of Success.")

NOTES AND GLEANINGS.

AN exhibitor at the NATIONAL AURICULA SOCIETY'S NORTHERN SHOW that was held at Manchester on the 27th ult. informs us that the Exhibition was not large, but the flowers were generally superior to those staged at South Kensington the week previously. The Rev. F. D. Horner was no competitor, and Mr. Simonite was only able to stage a very few plants. Mr. H. Wilson of Halifax was first in the premier class of six plants with Walker's John Simonite, a superb truss of eight large pipes (this was the premier flower in the Show), Prince of Greens, Colonel Taylor, Alexander Meiklejohn, C. J. Perry, and George Lightbody. Mr. T. Mellor, Ashton-under-Lyne, was second, his stand containing Alex. Meiklejohn with eight pipes, very fine; four seedlings, and Lovely Ann. Mr. Pohlman, Halifax, third; his best flowers were Colonel Taylor, Acme, and Mazzini (dark self), the other stands did not contain any extra blooms. For four Auriculas Mr. Pohlman was first with good examples of Confidence, Mazzini, Earl Grosvenor, and Imperator; Mr. Wilson second with Acme, Lancashire Hero, Garibaldi, and Prince of Greens; Mr. Thos. Mellor third with Lovely Ann, Lancashire Hero, Spalding's Metropolitan, and a seedling white edge. For a pair of Auriculas Mr. A. Shaw, Bury, Lancashire, was first with Alex. Meiklejohn and Lovely Ann, a fine pair; and Mr. John Beswick of Middleton second with Lovely Ann and a seedling self. Polyanthuses were far in advance of those shown in London. Mr. Beswick's three which secured the first prize in the dark class were very neat and well grown; they consisted of Lord Lincoln, Cheshire Favourite, and Exile; the same exhibitor also took first for three red grounds with President, Buck's

George IV., extra fine, and an unnamed variety. Alpines were not numerous, nor in such fine form as those shown in London:

— WE have received the schedule of the summer Exhibition of the LIVERPOOL HORTICULTURAL ASSOCIATION, which is to be held in Sefton Park on July 31st. Seventy-six classes are enumerated, of which thirty-one are "open to all England." The prizes in the principal classes are on a liberal scale, and we note an additional class for "fifty miscellaneous plants arranged for effect." In classes of this nature it is found more satisfactory to stipulate the space and allow exhibitors to occupy it with as many plants as they choose; under no other conditions could such picturesque groups be arranged as are seen yearly at the London, Leeds, Richmond, Reading, and other Exhibitions. Specimen plants cannot be arranged artistically, while ordinary decorative plants skilfully associated contribute a pleasant feature at exhibitions. We trust this Show will be as large and successful as was the Exhibition of last year, which was in all respects so creditable to the Liverpool gardeners. Schedules can be had from Mr. Robert Washington, 37, Aigburth Road, Aigburth, Liverpool.

— IN Messrs. Henderson's nurseries at Pine Apple Place many ORCHIDS are flowering, especially noteworthy being a number of small plants of Masdevallia Lindeni which appear very bright with their neat purple flowers. This is an admirable species for culture in a cool house, and it is astonishing what small pieces produce flowers. Odontoglossums are also extremely healthy, many of the cool species and varieties being in flower. An importation of "Blue Disas" has been received from South Africa, and the roots are growing vigorously, giving hopes that cultivators may yet enjoy a beautiful companion for *D. grandiflora*.

— IN another house the *TODEAS* we have referred to on previous occasions as grown entirely without fire heat are now in the best condition possible, each specimen having produced a crown of light green feathery fronds, which contrast beautifully with the dark green shade of the older fronds. In the same house *Disas* are growing vigorously, or as Mr. O'Brien quaintly expressed it, "as freely as Mustard and Cress."

— WE recently noticed in the conservatory at Ewell Castle, the residence of A. W. Gadesden, Esq., a brilliant display of *CINERARIAS*. The colours are extremely varied—crimson, blue, and purple being represented by rich and clear shades. The flowers are of great size, some over 2 inches in diameter, and very symmetrical in form. The vigour of the plants is extraordinary, for leaves have been measured that exceeded 16 inches in diameter, and the majority are unusually large and of a healthy green colour. These plants, like all others in the same establishment, reflect considerable credit upon the system of culture adopted by the competent gardener Mr. Scutt.

— MR. G. LAWRENCE of Wellingborough, states that he has cut seven hundred blooms from a *MARECHAL NIEL ROSE* since the 19th of March. It is planted inside a greenhouse 24 feet by 8 feet, and trained like a Vine all over the roof, which it has entirely covered. It was only planted two years last autumn, and has made very rapid growth.

— WE regret to learn the death of MISS HOPE of Wardie Lodge, near Edinburgh, which occurred suddenly on the 26th ult. Miss Hope was an ardent lover of flowers, and a close observer and skilled cultivator, hardy border and Alpine plants receiving special attention at her hands, and many choice varieties were cherished in her garden. Miss Hope was also an occasional contributor to horticultural periodicals, and her writings indicated that she possessed special knowledge of the subjects on which she treated.

— AT Garbrand Hall, Ewell, the residence of Mrs. Torr, the borders are now extremely bright with seedling GOLD-LACED POLYANTHUSES, of which Mr. Child, the able and well-known gardener, evidently possesses an excellent strain. Many of the varieties are so distinct and good that they deserve to be perpetuated. The forms and colours of the flowers are in some instances quite up to an exhibition standard, and one closely resembles the beautiful variety named Sunrise, for which Mr. Barlow obtained a certificate at the Auricula Society's Exhibition on the 20th ult. The lacing is very bright and clear, the colours varying from black to crimson; the trusses compact, and the habit dwarf. One large circular bed occupied with Tulips and Forget-me-nots, and margined with Polyanthuses, was especially pleasing, and indicates how easily and simply a garden may be rendered attractive long before the usual summer occupants of the beds can be trusted outside.

— AMONG the many plants in the same garden the SPECIMEN AZALEAS, so well known at the metropolitan exhibitions with the other handsome specimens of miscellaneous stove and greenhouse plants, are thriving extremely well, and giving indications of flowering profusely. Tuberous Begonias also receive great attention with admirable results, for there are several plants of *B. boliviensis* and Charles Masurel, with some of the strongest growth and largest flowers we have seen these varieties produce. That useful and showy plant *Tritonia crocata* is grown there for decorative purposes, and some plants were bearing large flowers of an unusually bright colour.

— A CORRESPONDENT asks if any of our readers can inform him of "the value of very fine specimens of *CORYLYNE AUSTRALIS*, measuring $8\frac{1}{2}$ feet high and about $5\frac{1}{2}$ feet wide, in good oak tubs?"

— UNDER the peculiar heading of AURICULÆMANIA a "SUBURBAN AMATEUR" writes as follows respecting the Show at South Kensington on the 20th ult.:—"While I yield to no one in the depth of my admiration for flowers generally, I positively cannot go crazed over Auriculas, although I have grown them and tried my best to like them. A great number of Auricula fanciers will no doubt pity me; but I think I am not alone in my views, for no one at the show in the Royal Horticultural Society's conservatory could fail to notice the thin sprinkling of admirers on the Auricula side, while the other was densely packed, the visitors crowding five or six deep to inspect the splendid exhibits of the various nurserymen. Auriculas have a great charm for some people, and I am glad they can enjoy them so heartily; but to me they are stiff, formal, expressionless, doll-like dainties, requiring fifty weeks of nursing to enable them to be arranged in rows, again doll-like, for visitors to wonder at and admire."

— AN experienced cultivator sends the following notes on ORCHIDS:—"I have found it prove beneficial to plunge the smaller sizes of pots in which Orchids are grown into others a couple of sizes larger, packing the space between with sphagnum. In houses constructed for Orchids such a proceeding may not be necessary, but in ordinary stoves the above mode of plunging keeps the plants from becoming suddenly dry."

— THE same writer observes—"Last July I obtained six small imported pieces of *ODONTOGLOSSUM VEXILLARIUM*. Instead of potting these singly they were pricked-out into a 5-inch pot. In February last they were shaken out, and three which were just commencing growth were planted in a 4-inch pot; the other three, which had not finished growth, being placed together in a pot of the same size. But this time pieces of potsherds were placed between the plants in such a manner as they are in a degree in separate compartments. The advantage of this plan is, that the compost can be kept in a more equable condition as regards moisture than if they had each been in small pots, as they will be next spring."

— WE understand that Mr. S. BRANDER, gardener at Skene House, has been appointed gardener to the Earl of Fife at Duff House, in the room of the late Mr. Mackie. Mr. GEO. COOK retires from the charge of Major Wood's garden at Holeyn Hall, Newcastle-on-Tyne, and is succeeded by Mr. McCombie, gardener to the late Sir Walter Trevelyan, Bart., Wallington Hall, Northumberland.

— A RECENT issue of the *Daily News* has the following in reference to the PHYLLOXERA:—"It is no wonder that many French 'viticulturists' take a very despondent view of the future, for M. Tisserand, the Director of Agriculture, in his recent report concerning the *Phylloxera vastatrix*, gives some startling figures to show how rapidly the insect is doing its destructive work. In the year 1877 twenty-eight departments had been attacked, while a year later ten more had to be added to the list, which was further increased by four others last year. Nine years ago the French vineyards had a total area of about six million acres, more than a sixth of which is now totally devastated, while a seventh more is attacked and will soon be laid waste. Thus only four million acres are left under cultivation, and if the present rate of progress is maintained the whole of the French vineyards will be destroyed. A good deal has been hoped for by the use of American stocks, as many people believe that the malady is due as much to the weakness of the plants as to any other cause, but time alone can show whether this hope is well founded. With regard to the submersion of the Vines, which is undoubtedly productive of good results, it must be borne in mind that only a limited area of vineyards can be flooded, and that when this

has been done the soil is so impoverished by being under water for six weeks that it is necessary to manure it at great expense. In short, without going so far as to say that Bordeaux and Burgundy, Champagne and Cognac, will be no more than pleasant memories a few years hence, it is evident that the outlook is very serious."

— ON Saturday, May 1st, the Rev. Canon Farrar preached a "flower" sermon at the Slough parish church, at which about 1000 children, chiefly belonging to the parochial schools, were present. Every child brought a nosegay of flowers, and at the close of the service these were deposited on the steps of the chancel, the offerings being intended for the children who are inmates of the Westminster Hospital. The children of the Duke of St. Albans were among those who brought bouquets. The flowers formed a large bank and completely scented the chancel of the church. They were afterwards taken to London by Canon Farrar, and occupied several large packages. The Canon selected his text from Matthew vi., 26, "Consider the Lilies of the field, how they grow."

SWANLEY IN SPRING.

SWANLEY before Mr. Cannell invaded it was only known as an obscure railway junction, but its name is now familiar to horticulturists throughout the civilised world. By his extraordinary zeal, indomitable perseverance, and persistent labour he has converted a plain pastoral valley into what he justly terms a "home of flowers," and has established a business of great benefit to the locality, as it has necessitated the erection of many dwellings for the accommodation of the workers in this floral hive of industry. By an intuitive perception of the merits of flowers and a rare faculty of anticipating the public requirements, the proprietor of this nursery has found it incumbent to keep developing its resources, and increasing the number of his assistants, until the glass erections comprise fifteen span-roofed structures each 100 feet long, and apparently about an acre of frames, while sixty men are now employed in the conduct of the business he has created.

At the present time in preparation for the coming campaign, the nursery presents a striking appearance. Every inch under glass is taxed to the utmost in accommodating the plants that will be required for embellishing gardens in this and other countries, while acres of flowers are grown that need no protection.

So great is the stock of plants, and so numerous yet well selected are the varieties, that a detailed description is impossible, and only the prominent features of the nursery can be noticed. Very striking is the collection of Zonal Pelargoniums, most choice and complete, now flowering in all their grandeur. From end to end one of the lengthy structures is ablaze with thousands of magnificent trusses in every shade of colour pertaining to this diversified family of plants. No one can imagine the brilliant, almost startling, effect produced by this unique collection which now appears in the zenith of beauty. The best of the newer forms now expanded is a brilliant crimson-scarlet variety named "Right Ahead," with pipe 2 inches in diameter, flat, round, smooth, and solid. White Vesuvius is a mass of purity, and its congeners are all aglow with flowers. The newest varieties are not yet in flower, but as hundreds have been purchased, and after careful trials and elimination less than a dozen have been preserved for commerce, these must possess exceptional merit. Other houses are filled with young plants in thousands, and surprisingly large is the number of variegated forms in the several sections, the foreign and colonial demand for Gold and Silver Bicolors and Tricolors being very great. Amongst the Ivy-leaved varieties Mrs. Cannell is conspicuously attractive, and some of M. Lemoine's hybrids are distinct and promising. Early-flowering show or decorative Pelargoniums, such varieties with others as Mr. Castle alluded to last week, are extensively grown, and are now being propagated rapidly, and the Cape species are also well represented. Another house is filled with *Fuchsias*, many thousands being required to meet the daily demand for these elegant flowers, which are represented by the best varieties in commerce, the collection being singularly complete. In another house we find *Verbenas* in great numbers. A reaction would appear to be setting-in in favour of these flowers, for the bedding varieties can scarcely be propagated fast enough, while the choicer forms are being increasingly appreciated for pot culture; and beautiful they are, only requiring a cool light house or frames in summer for their successful culture. As cut flowers the finer varieties of *Verbenas*

have few equals. The plants are now in 32-size pots and are growing like Sage in June. An adjoining house is filled with Primulas now seeding—grand plants, which when in flower were 18 inches in diameter, grown in 48-size pots, the varieties being of the best. Calceolarias in excellent condition are just coming into beauty; many Petunias are expanding their distinctly barred flowers; and Tuberous Begonias, which are grown largely, are also contributing their brightness, a few early varieties being very gay. Gloxinias are in various stages of growth and very numerous. Lantanas are flowering freely—a choice collection, while Alternantheras and other popular bedding plants are being prepared in tens of thousands to meet the coming demand. Coleuses are extremely attractive, the collection including the newest and best English and continental, and even Australian varieties. The colouring in some is remarkable even to quaintness, and the foliage of nearly all of them is very handsome. The demand for these modern forms is very great, and the old species *C. aromaticus*, pale green, is highly perfumed. On the roof of this house the fine winter-flowering *Tropaeolum Bowdon Beauty* attracts notice. It is a luxuriant grower, with fine crimson scarlet flowers that are produced as freely in winter as at any other time. It is valuable for affording cut flowers, and is a quick-growing roof or screen plant. The plants in all the houses are noteworthy for their cleanliness and health; and their condition, especially the Pelargoniums now flowering, affords excellent testimony of the value of the fertiliser which is used in the nursery—Cannell's Invigorator.

The outdoor department also merits notice. The late dry weather has enabled arrears of work being brought up, and all is neat and orderly. Frames are filled with "bedding stuff." Border plants, Auriculas, very healthy; Primroses in quaint forms, including Galligaskins, Jack-in-the-Green, the semi-duplex varieties, and other curiosities, with the best of the double and single varieties for border decoration. The plunging ground contains Alpines, including a good stock of Saxifraga Wallacei, the best of its section. Five hundred varieties of Chrysanthemums are being potted and placed outside, with Carnations, &c., in variety. Of Phloxes, Pentstemons, Violas, Veronicas, Dahlias, &c., large collections are grown and flowered in the nursery. A very large quarter is planted with Hollyhocks, a stately and of late a neglected flower, or rather a plant driven out of culture by the disease with which it was overtaken. Laced Polyanthus are grown in thousands, Mr. Cannell having determined to raise some varieties of real merit.

Violas and Pansies are now magnificent, no other term doing justice to the rich and bright masses of colour. Blue King is a veritable sheet of flowers, and Chieftain is if possible still richer. No flower beds in summer can equal the effect of these glowing masses at the present time. Those are amongst the best of the early-flowering blue or purple varieties; but a newer one, not yet grown in large masses, Royal Visit, is of remarkable richness, and a great demand for it is anticipated. Of the early yellow bedders Yellow Boy is one of the best, but Queen of Spring is regarded as the best of all for this purpose; it is clear, bright, spotless, and floriferous. Purity is largely grown as a white and is an excellent bedder, but some of the newer forms will perhaps surpass it. For bedding Mr. Cannell eschews flowers with large flimsy petals, even if individually beautiful, and selects those smaller and stouter that are not destroyed by cutting east winds nor snowstorms. The old Magpie Pansy must not be passed in silence, it is a quaint and pretty flower that should be in all gardens. It is valuable for cutting, and grown in masses has a striking effect.

Hardy plants for rockwork and carpet bedding are grown in large masses. The Golden Stonecrop is now very attractive, but the most remarkable effect is produced by Veronica repens. In the summer this is employed as a close-growing green carpet plant, but now the large bed is a dense crowded mass of pinkish white flowers as level as if flattened with a roller and not more than an inch high. *Herniaria glabra* is a dense close mass of deep green, and no amount of frost injures it. Mentha, Sedums, Saxifragas, and all other plants of this nature are also represented. Border flowers are also grown, a mass of Veronica gentianoides variegata being beautiful by its clearly variegated foliage, and will shortly be more beautiful still when covered with its clear blue flowers.

These are only a few of the salient features of this plant manufactory that strike the visitor at the present time. Assuredly the love of flowers is wide and deep, and it must be getting wider and deeper; at any rate, if there are any who

have doubts on this point to be dissipated let them visit "Swanley in spring."—WANDERER.

RICHARDIA ÆTHIOPICA.

THIS well-known plant is one of the most useful that can be grown for window, greenhouse, or church decoration. For the latter purpose the plants and flowers are specially adapted. Its cultivation is so simple that little need be said about it here; but I wish to remark, that to obtain it in the highest state of excellence it should not be grown in clusters of a great number of roots together, as the flowers come much smaller than when well grown as single plants. I send you a bloom from a plant grown in this way, which I think you will consider better than two or three about half the size. Plants in 8-inch pots bearing from three to seven or eight blooms like the one sent have a grand appearance, and well repay the little labour taken to secure them.—J. MUIR.

[The flower is extremely fine, the spathe being 10 inches deep and 7 in diameter, very pure white, and of great substance.—EDS.]

THE GENERAL HORTICULTURAL COMPANY.

THE magnitude of the trade in plants and flowers is not only demonstrated in the great emporium of Covent Garden, but from time to time is strikingly manifested in the principal nurseries. The rich displays in those establishments have been frequently referred to, and now a display in Regent Street is similarly entitled to notice—namely, that provided by the above Company on the occasion of the opening of their extensive premises at Warwick House on Monday last.

The *habitudes* of the busy thoroughfare could scarcely have witnessed a more tasteful display of floral beauties than that which occupied the two floors of the building, and great credit is due to Mr. Wills and his coadjutors in having so effectively transformed such a formal structure into what one of the visitors not inaptly termed a "terrestrial paradise." That portion of the ground floor fronting Regent Street is at present occupied with the cut flower and bouquet business, and there the skill of the decorators had been concentrated. The walls on each side being covered with mirrors gave rise to the pleasing illusion of an apparently interminable vista of elegant plants. On all sides were lovely banks of Maidenhair Ferns, from which arose in a most charmingly natural manner the flowers of innumerable choice Orchids, those predominating being excellent varieties of *Odontoglossum cirrhosum* and *O. vexillarium*, some of the latter bearing very finely coloured flowers. Large numbers of graceful Palms were also employed most effectively, the combinations of elegantly divided and drooping foliage with the delicately tinted flowers of the Orchids being extremely pleasing. But the chief features of the display were unquestionably the four grand standard Wistarias, which were about 9 feet high, and had heads over 5 feet in diameter, the branches being densely crowded with handsome clusters of flowers. Such specimens as these are exceedingly rare, and they awakened the admiration of all the visitors. Other departments on the same floor are devoted at present to fruits, vegetables, and the bouquet business, but some alterations are contemplated. Around by the walls and in every possible space were groups of plants which, though less *récherché* than those previously referred to, were well suited to their rather darker positions owing to the greater numbers of brighter colours they contained. A spacious staircase leads to the upper floor, where similar groups were arranged for the occasion, but that department it is ultimately intended to devote to the exhibition of different styles of table decorations.

Numerous visitors assembled during the afternoon, and great satisfaction was expressed by all.

CARPET BEDDING.

AS long borders are admirably adapted for the display of designs in flowers or foliage, and as such borders are frequently desired to be furnished with what are known as carpet bedding plants, the accompanying diagram will suggest how the work may be carried out in a graceful and pleasing manner. The design is simple, smooth, and free, and may be effectively planted in a variety of ways according to the stocks of plants at disposal. The mode of planting is submitted as an example, and if it is adopted No. 1 should be raised about 4 or 5 inches,

to form a lower terrace for the small chain pattern and a higher for the larger one. A great variety of plants may be employed for planting this border different from those mentioned, but to afford rich colour *Alternantheras* for Nos. 3 and 6 should be retained. No. 6, however, might be planted with *Iresine Lindeni* or *Coleus Verschaffeltii*; but if these are employed it will be well to sink the bed a little so that the

exact locality, but I have never seen Lancashire mentioned as one of the counties in which it is found.—C. W. DOD.

CAMELLIA CULTURE.

I HAVE a small collection of Camellias here, concerning which I offer the following remarks. Five years ago the majority of the plants were mere stumps, cut in and cut back without any thought as to present appearances. At this date they have become inconveniently large, but they are increasing in value as flower producers, more especially as the season of their harvest of bloom extends from November till April. In February after I took charge the entire stock of Camellias in pots were cut back in proportion to the state of their health. Placed in a stove and carefully watered they were not long in starting into growth, those that were cut back to the main stem taking longer than those that were not so hardly dealt with. The next thing to see about was the roots, and directly there was a sufficient amount of leaf-growth formed the whole of the soil was shaken from the roots and much smaller pots given them. In potting, the main roots which had been buried previously were kept just above the soil. The soil employed was a light fibrous turf, and in this material many roots had been formed before winter. The plants have been potted twice since, or once every two years, the same material having been employed. The roots which were left exposed at first have been somewhat lowered at these biennial pottings, but in no case have they been entirely covered. This is a point of some importance, and is not by any means confined to Camellias, as all woody plants succeed best with these roots left rather exposed.

The years that the Camellias have not been repotted the soil has been surface-dressed, and if the compost in which they are potted is not rich the same cannot be said of the surface dressings. To good loam an equal quantity of cow dung is added, and to a barrowful of this mixture a 7-inch potful of bone dust and the same quantity of soot is added. Here let me give a few words as to the state the cow dung ought to be in when used. It should not when rubbed up have any tendency either to be lumpy through excessive dryness, or to become cohesive through being too wet. To obtain full benefit from the above manure it should always be employed in this condition. I am careful when removing the old material from the surface of the soil to interfere as little as possible with the roots, which are actively engaged in procuring nourishment. In a healthy Camellia confined to a pot small in comparison to the size of the plant, it is surprising what a number of active roots are to be found making their way upwards. Beside the surface dressing, it is very beneficial, in fact necessary, to give the plants something stronger than pure water. Our plants consequently are always supplied with soot water, not over-stimulating but at the same time of very great value. In warm weather, not cloudy, our plants are watered twice a day. Of course when repotted they do not require so much, but after roots have been freely produced for nine months at least out of the twelve, I find they require two waterings a day, and in the other three dull months of winter once every day. The surface dressing makes no difference to the amount of water required; so long as the water passes freely away there is no danger of injuring the plants. At the same time it is only right to say that the lowest general temperature these plants are subjected to is 50°, and that for only a very short period. With regard to insects I am never troubled with them. The plants are never syringed with the exception of once a year, when a very hot solution of soap and water is applied to wash off dust or any insects which may be present. There is no better insecticide for Camellias than the above. We have applied it at a temperature little below boiling point, and with excellent results.

Last December I exhibited at a local meeting a stand of Camellia blooms, and similar stands could have been furnished from the same plants at any time up to the present date. This continuous habit of blooming is formed by a very simple method, that of cutting a portion of the blooms with three or four of the leaves and a portion of the stalk attached. A bloom cut just now, it will plainly be seen, would cause a late bud to push, which would not unfold its flower till about the same period next year. According to the temperature of the rooms I find Camellias cut with a portion of the stem to place in water last from a week to ten days in good condition, and for a Camellia there is no more beautiful setting than its own foliage. Numbers of flowers are also taken in the usual way

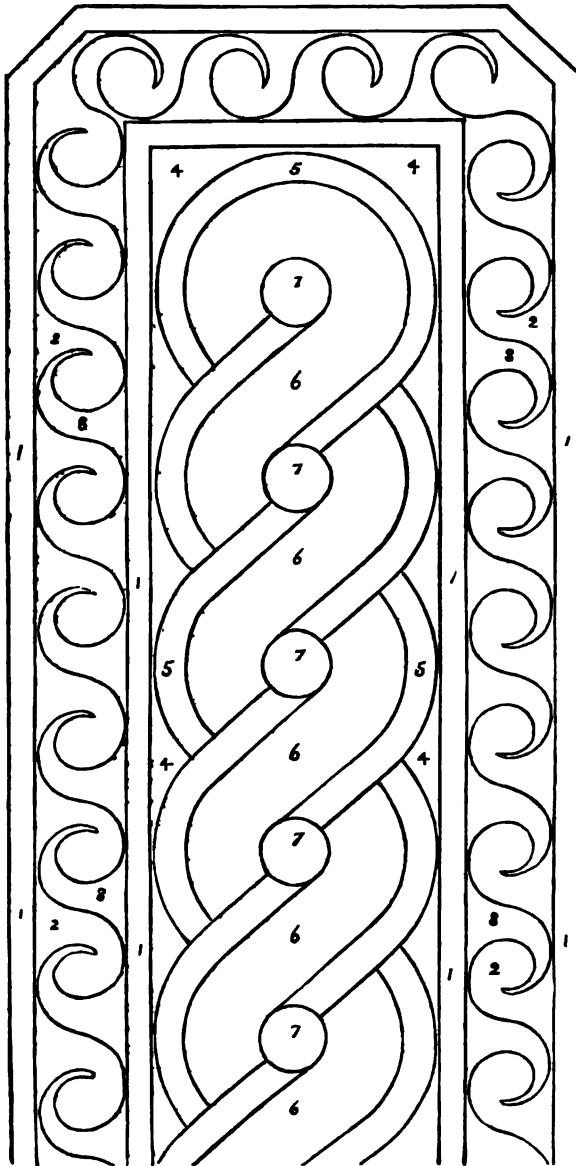


Fig. 51.—MODE OF PLANTING.

- | | |
|---|---|
| 1, Two rows of <i>Echeveria</i> and a little <i>Sedum glaucum</i> planted among them, or <i>Sedum alto-</i> | 4, <i>Herniaria glabra</i> . |
| gether. | 5, <i>Mesembryanthemum cordifolium</i> |
| 2, <i>Pyrethrum</i> , <i>Santolina incana</i> , or <i>Veronica incana</i> . | variegatum, or <i>Santolina incana</i> . |
| 3, <i>Alternanthera</i> of any kind. | 6, <i>Alternanthera magnifica</i> or <i>par-</i> |
| | roychyoides major. |
| | 7, <i>Pachyphytum bracteosum</i> or <i>Kleinia repens</i> . |

plants may not rise much above their neighbours. The design is applicable to a border of any length and nearly any width from 6 to 12 feet. It is equally suitable for a large oblong bed.

ADIANTUM CAPILLUS-VENERIS.—As the British stations in which this Fern is found are rather limited in number, it may be interesting to botanists to know that a small colony of it still survives in a cove not far from the seacoast near Furness, in North Lancashire. It is perhaps better not to indicate the

and wired, but there is no danger of injuriously affecting the future flowering of healthy plants by cutting the blooms with a portion of the stalks. I may say that the plants under discussion are grown under the shade of Vines, which is not an unmixed benefit. The Vines are started in the beginning of February, though not forced hard in the ordinary acceptance of the term. The earlier buds are ripened sufficiently early to commence opening a few flowers in November, and later on in more abundance without subjecting them to a forcing temperature.—R. P. BROTHERSTON.

AUTUMN PEARS—COMTE DE LAMY.

ALTHOUGH not of imposing appearance this is a Pear of great usefulness, and the lack of size is in a great measure compensated for by the large number of excellent fruit that a healthy tree will produce. The majority of the Pears of high quality that are grown for use in autumn are generally cultivated as pyramids if not grown against walls, but the variety under notice is in most districts suitable for cultivation in the form of orchard standards. In this form the trees grow healthily, bear heavily, and the fruit is of the first quality.

In some gardens in the south of England the fruit thus grown in the open is superior in flavour to that produced by trees on walls. It is because of the hardness of this Pear and its good qualities under the simplest form of culture that we direct attention to it as an essentially serviceable variety, capable of producing a great abundance of superior fruit for home use and for market. It is also known under the names of Beurré Curtet, Beurré Quetelet, and Dingler. The following is the description of this useful Pear:—Fruit below medium size, roundish obovate. Skin yellowish green, with brownish red next the sun, and strewed with russet dots. Eye small, set in a slight depression. Stalk an inch long, set in a small cavity. Flesh white, tender, buttery, melting, sugary, and richly flavoured. A delicious Pear; ripe in October.

NOTES ON USEFUL ORCHIDS.—No. 2.

PERHAPS there is no genus of Orchids more lovely than *Dendrobiums*. They include plants of varied habit, possessing in their flowers a variety of colour; some are of an immense size, while others are most delicate and very fragrant. There is great diversity amongst *Dendrobiums* in their growth, some

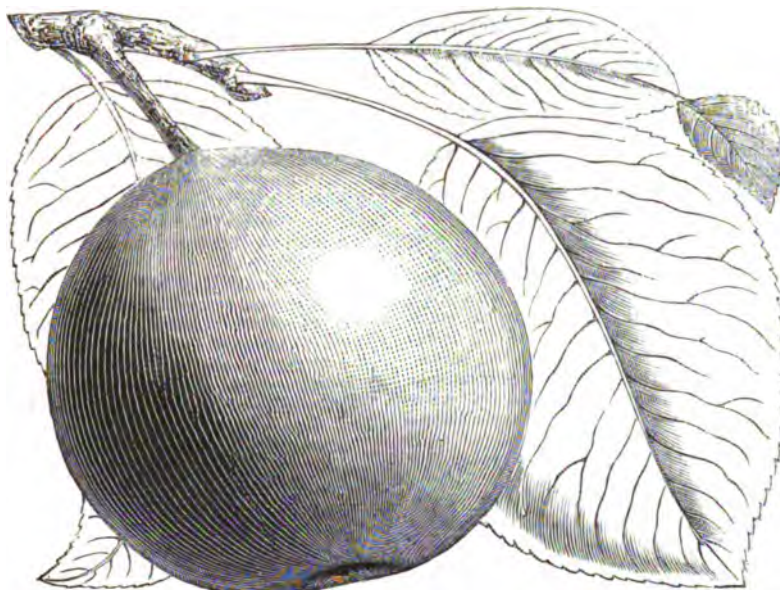


Fig. 52.—COMTE DE LAMY.

being of a sturdy and compact habit, others erect, and others with long, slender, drooping stems, including both evergreen and deciduous species. They appear to us more interesting than the majority of Orchids, because they can be accommodated in many ways—some in pots, others on blocks and in baskets suspended from the roof. They can in consequence be grown where many plants would not thrive. It is difficult amongst so many lovely plants to select the most useful. We intend in these notes to confine ourselves to one of the oldest and most useful for cutting purposes, room and table decoration, and for the decoration of stoves as well as the conservatory—namely, *Dendrobium nobile*. It has fine fragrant flowers that last in a dry temperature of 45° to 50° for a month or six weeks. Taking into consideration all the qualities of this species, it is the most useful *Dendrobium* grown. It is found in nearly every garden of any size. *Dendrobium nobile* flowers profusely during the winter months; in fact by pushing forward some and retarding others plants may be had in bloom over a period of eight months. It would be difficult to find amongst the whole order of Orchidaceous plants one so well suited for the amateur, who perhaps only possesses a small house or two. It would be unreasonable to suppose that such fine long pseudobulbs could be produced in an ordinary plant house and in a comparatively low temperature as when subject to more heat and liberal cultivation; yet *D. nobile* can be grown and bloomed most successfully. Few Orchids will bear such severe cutting as this one. For filling small vases the

whole, or the greater portion, of the pseudo-bulb can be cut off when in flower and mixed with a few Fern fronds. What looks more delicate or choice, and what will last longer in a cut state? To remove the pseudobulb from many of the choicer *Dendrobiums* would seriously injure the following year's growth. Many Orchids are more inclined, if not intelligently managed, to diminish in size rather than increase, but severe cutting does not appear to injure *D. nobile* in the least.

Few Orchids can be so rapidly increased, which can be done by division of the old plants, and from the young shoots at flowering time which often appear in quantity along the bulb, especially from growths that have not been thoroughly ripened. If the cultivator starts with these young plants it will be two years before bloom can be expected. They will do well in pots or pans, on blocks, or in small baskets made of teak wood, which is by far the best and most serviceable. This is a matter which entirely depends upon taste and convenience. Some will be found useful in 5 or 6 inch pots for decorating rooms and dinner tables. To accomplish this a quantity should be placed in 3-inch, or even in 5-inch pots. We start with the former, in which the plants remain the first year and make fine, short, stout pseudo-bulbs, which should be thoroughly ripened to be ready for a good start the next season. Old pseudo-bulbs if cut off and laid in moss in heat and moisture, or pegged on the top of pots, will soon produce a quantity of young pseudo-bulbs, from which a stock can quickly be obtained. The second season the young plants are transferred into 6-inch pots after

growth has fairly commenced. Dendrobiums succeed well in a compost of fibry peat, the small particles being shaken out, large lumps of charcoal, sphagnum moss, and plenty of coarse silver sand. I have seen loam used and the plants do well, but I would not recommend employing it, because it becomes sour quickly. When potting, all the old worn-out material should be carefully picked from the roots, and the roots should be washed with tepid water. While growing Dendrobiums require liberal applications of water, and if they are allowed to remain in the same pots for a few seasons frequent supplies of liquid manure can be given with advantage. It is necessary during the second season to induce the young plants to make good growth. I have found growth made under the influence of light, a moderate heat and air, much the best, and the plants generally bloom with greater profusion. The plants must when growth is completed be exposed to full sunshine, more air, and a drier atmosphere. After the growth is thoroughly hard a cool greenhouse temperature is most suitable for the plants. This species requires a long rest, and while in cool quarters little water is necessary. Water may even be withheld for three months, and the plants will not be injured; but the pseudo-bulbs must be first thoroughly matured, or they will never swell out when water is applied.

Phajus grandifolius.—This fine old terrestrial Orchid is worthy of a place in every garden, because its beautiful flower spikes are produced during the winter and spring months, and upon this account where choice flowers are desired it claims attention. Being an evergreen it is not unsightly when out of flower; its foliage is noble, and suitable for associating with other stove plants. While growing this Phajus delights in abundant heat and moisture, but care must be taken that water does not come in contact with the young growths or they will be greatly injured. The best time to repot the plants is after flowering, when the growths are a few inches long. The compost I find most suitable is rich fibry loam, peat, cowdung, plenty of sand, and charcoal broken small to keep the soil open. I would advise employing the compost as rough and fibry as possible, and the fine soil shaken out of both loam and peat. The thick fleshy roots of the Phajus ramble much better in an open soil than when it is close. Good drainage is necessary about 1 or 2 inches in depth at the bottom of the pots according to the size of the pots. Water should be given liberally while the plants are growing. The soil when potted need not be raised above the rim of the pot, as should be the case with Dendrobiums and many other Orchids. I have found the plants do much better if the old soil is entirely shaken from amongst the roots every time the operation of potting is carried out, and fresh compost employed. When growth commences the object should be to obtain strong robust growths, as upon this the length of the flower spike will depend. From strong pseudo-bulbs the spike will be nearly 4 feet in length. When in good condition a large plant is a noble object, either for the stove, conservatory, or exhibition tent. If required for the latter the plants will need retarding during late autumn and winter, but care must be taken that the plants are not injured by keeping them too cool, the effect of which will soon be perceptible by the yellow appearance of the foliage. When in flower this Orchid lasts a long time in the conservatory or where the temperature is not too moist or high. They are also much benefited by the lower temperature, which causes them to rest thoroughly. When removed again to heat they grow luxuriantly. Phajus can be bloomed in very small pots, in which they are suitable for room decoration. The plants should be well supplied with manure water when established in their new compost.—WM. BARDNEY.

TYING VINE SHOOTS.

I CAN fully endorse the remarks of your correspondent, "A. K." (page 311), on this subject. A short time ago I tied down the shoots in a house of Muscats, which by reason of other pressing work had been left for a fortnight longer than usual, and had become, as your correspondent remarks, as pliable as willows, and not a shoot broke either then or since. In another vinery where I tied them down, at the usual time several strong shoots broke within two hours, and more on the following day, although they were not apparently tied too tightly.

I think that much damage done by tying too early might be avoided if the shoots were stopped and allowed to remain untied until the tissues had become firm and capable of being

secured in their proper places at once, instead of having to do it two or three times, as is the case in some places.—A. J.

NONSUCH PARK.

IN the beautiful and picturesque part of Surrey between Ewell and Cheam is situated that portion of a once extensive and famous estate which still retains the name and a few of the attractions that distinguished it when the Palace of Nonsuch was a favourite resort for England's Maiden Queen, Elizabeth. This place was one of those selected by Henry VIII. with excellent taste for the erection of royal residences, and certainly as regards the natural advantages of most pleasingly diversified scenery and healthy situation it could scarcely be surpassed. The palace which that monarch commenced building was not completed, however, until the reign of Elizabeth, who gave it to the Earl of Arundel, and he carried out the original design. Elizabeth subsequently repurchased it, and frequently resided there during the latter part of her reign. Since then it has been occupied by succeeding members of the Royal Family and their favourites, by one of whom, the Duchess of Cleveland, the palace was pulled down and the materials sold early in the eighteenth century, the greater number of the fine trees being removed at the same time. Numerous changes have occurred since then. The estate has been greatly reduced in size, and a large castellated mansion erected with some pretensions to architectural beauty, which, together with the seventy acres of land now bearing the name of Nonsuch Park, is at present in the occupation of W. R. G. Farmer, Esq. But little of the fine timber remains, with the exception of some handsome old Elms and *Pinus sylvestris*, the former having originally constituted an avenue more than a mile in length, a good portion of which is still perfect. An old pollard Elm is also pointed out as Queen Elizabeth's Elm, being one beneath the branches of which she used to stand when shooting the deer with a crossbow, a sport to which she was rather partial.

The garden attached to the house is not very extensive, but contains several remarkably beautiful Conifers and other trees, and excellently kept lawns. Among the former *Cedrus Deodara* is well represented by specimens of considerable size in vigorous health. Piceas are also numerous; Lawson's Cypress, *Thuja plicata*, and *Juniperus suecica* are exceptionally fine, two symmetrical specimens of the latter being about 10 feet high each. Several grand Horse Chestnuts are also noticeable, the lower branches spreading widely and resting on the ground. But perhaps the most interesting of all is a magnificent *Wistaria*, which covers a wall nearly 10 feet high and 64 yards long, the largest specimen of that beautiful plant it has ever been my fortune to see. When its grand pendulous bunches of flowers are fully expanded the effect must be unrivalled. The glass houses include several that are devoted to plant culture, and a few vineries. In the former the most noticeable are the specimen Azaleas, two of which, the Old White and Triumphans, are about 6 feet high and the same in diameter, and covered with flowers. There is a good *Rhynchospermum jasmoides* and several *Eriostemans* in surprisingly fine condition, and bearing a profusion of flowers. *Richardias* also are remarkable for the great size of their spathes, some plants in 32-size pots having spathes 8 inches wide and 10 in length, indicating unusual vigour. These admirable results Mr. Sillence, the experienced gardener in charge, attributes to the system of placing the plants out in beds during the summer, and well supplying them with water. In the stove is a small recess employed as a natural fernery, the walls of which are covered with *Nephrolepis tuberosa*, the pendulous light green pinnate fronds imparting a very pleasing appearance to it. At the base is a pool of water, and on each side rises a miniature rockery occupied with *Ferns*, *Selaginellas*, *Tradescantias*, &c., one plant of *Tillandsia zebrina* bearing a brilliant scarlet spike that contrasts very strikingly with the prevailing green tints. Among the Orchids are some fine pans of *Cypripedium insigne*, and a large plant of *Sobralia macrantha* flowering freely, with several *Odontoglossums*, all indicating careful culture. The Vines give promise of an even crop of fruit, while the kitchen garden and grounds generally are kept in excellent order, several improvements being contemplated by Mr. Sillence that will undoubtedly prove highly advantageous.—VIATOR.

BULLFINCHES AND THEIR FOOD.—Kindly allow me to correct a slight error on page 337. In the last paragraph for

"It will be difficult to prove that in the entomological branch of his subject he was not likely," &c., please read, "It will be difficult to prove that in the entomological branch of his subject he was likely," &c.—W. R. B.

SEASONABLE NOTES ON FLORISTS' FLOWERS.

Auriculas.—As the bloom is now over the sooner the plants are removed to their summer quarters the better. This should be in a position facing the north, so as to escape the hot suns; for although in its natural state the Auricula is exposed to the scorching suns of Alpine regions, yet in its cultivated and highly bred condition there are many changes of culture it has to be subjected to, and this is one of them. It is more important to growers in the warmer parts of England than in the north. Our greater heat and dryness make it absolutely necessary that it should be in a cool position. A high hedge is better than a wall, as the latter reflects heat to some extent. Preparations should now also be made for repotting, which had better be done the latter part of the month. Obtain some good fibrous loam, the more fibrous the better; and the better the quality of the loam the more likely is the grower to obtain success in his culture. To three shovelful of loam add one of well-rotted cowdung and one of leaf mould. Let all this be well chopped and incorporated in some dry place, so as to be ready for use when wanted. Let it not pass through the sieve, as the compost should not be close but open, and sifted compost is apt to get close and cloggy. Directions about potting will be given later on.

Carnations and Picotees.—Those in beds must now be carefully staked, and as the plants spindle for bloom the flowering stems should be carefully tied to them, but not too tightly, as room must be given for the stem to increase in size. The beds should be carefully weeded, and if there is any danger of wireworm pieces of potato or carrot should be sunk in different parts of the beds about an inch or two beneath the surface and occasionally examined. Watering will not be necessary as yet, as, although the surface soil is dried up by the scorching east winds, the ground underneath is moist.

Gladioli.—These are now beginning to show themselves, even although they have been planted as deep as 6 inches. Some kinds are much earlier than others, and you may be always sure of finding Shakespeare amongst the first to make its appearance. They require but little attention at present, except that always necessary one of keeping the bed clear of weeds. This had better be done by hand-weeding rather than with a hoe, as the latter is apt to slip and perhaps cut in two a promising stem. Hitherto the bulbs have had a good time of it, as the ground has been in good condition, but it is impossible as yet to say how the effects of last season may tell on them. Unripened corms may not at first display their weakness, but are likely to do so further on; just as one finds many Roses which seemed alive after the winter but are now showing signs of decay.

Ranunculus.—These have come up well and are at present prospering, but they do not like dry weather, and if these dry east winds continue it will be necessary to water them; but it is best to keep them from this as long as possible, and when it is done the watering should be done between the rows and not over the foliage. Hand-weeding must also be diligently carried out, for as the foliage of the plants is fine and delicate weeds are apt to smother them, while the rows are so close together that it is difficult to hoe between them without injuring the plants. It is a great pity that these very lovely flowers are not more grown. Nothing can be more beautiful than a well-grown and well-bloomed bed of the lovely Persian Ranunculus with its many and varied colours. The Scotch varieties and those raised by Mr. Tyso of Wallingford are, however, more floriferous than the old Dutch kinds.—D., Deal.

NOTES ON VILLA AND SUBURBAN GARDENING.

KITCHEN GARDEN.

Runner Beans.—These are some of the most popular and profitable vegetables in cultivation, being easily grown and always in demand. No garden however small should be without a few rows of them, which by ordinary fair treatment will yield heavy and continuous crops, commencing early in July and lasting till destroyed by frost. Although usually trained up stakes in gardens these are not absolutely necessary, as the large supplies annually sent into the metropolitan markets are all grown in the fields without stakes. Therefore stakes may be dispensed with by placing the rows 80 inches apart and keeping the growths closely

pinched back, thereby inducing the production of strong flower spikes in abundance from the lower joints. The rows of those intended to be staked ought to be as far apart as the length of the stakes used, as although Runner Beans will thrive with a slight shading overhead they should not be crowded in any way. The ordinary faggot wood answers well for staking, the points of the Beans being taken off when they reach the tops. Single rows are preferable to double rows. Draw the drills about 8 inches deep and sow thinly, and in each instance eventually thinning out the plants to about a foot apart. Where good distances are allowed one or more rows of early Potatoes can be grown between the rows, and afterwards Cabbages for the early part of the winter. The ground should be heavily manured and deeply dug, concentrating the manure in trenches if at all scarce. Runner Beans are often grown as climbers in town gardens, and are both ornamental and useful.

Beet.—Now is a good time to sow seed for the main crop of this useful root, which deserves to be more generally grown by amateurs. Good shapeable roots are best obtained from light and deeply dug soil that was well manured for the previous crop. If fresh manure is employed it should be dug in deeply, otherwise it will cause the roots to fork, and also induces objectionable coarseness. Sow the seed thinly in drills a foot apart. The dwarf-growing crimson-topped varieties are the best, of which either Carter's Perfection, Dell's Crimson (Osborn's Select), or Sutton's Improved Dark Red will be found suitable.

Peas.—About two more sowings of these in most instances will be found sufficient, those sown still later being quite chance crops. Main and late crop varieties are suitable, notably either Yorkshire Hero or Vetch's Perfection, Blue Scimitar, and Premier; and of tall varieties Emperor of the Marrows and Ne Plus Ultra.

Spinach.—The ordinary summer Spinach seldom attains perfection during hot and dry weather, but the New Zealand Spinach is a good substitute. Sow a few seeds in heat, pot off the seedlings singly when large enough into small pots, and when established harden off and plant out. It grows vigorously in a hot position without manure, and still better with it, six plants placed a yard apart yielding abundance of succulent growth, the points of which are picked and used.

Vegetable Marrows and Ridge Cucumbers.—If the seeds of these are not already sown it should at once be done. Sow singly in 4-inch pots, or several seeds in a larger pot, potting off the young plants when the first rough leaf is formed. They germinate quickest in heat, but may be raised in a cold frame, greenhouse, or window. Large heaps of manure for their culture are both unnecessary and wasteful, as better crops can be obtained from plants in ordinary garden soil providing liberal supplies of manure are dug in. Stockwood Ridge Cucumbers and the Long White Vegetable Marrows are alike good.

VINERIES AND GREENHOUSES.

Grapes.—The Vines in unheated structures are now making rapid progress, and in many instances the growth will require stopping, tying, and also disbudding where likely to be at all crowded. One shoot is generally sufficient to each spur, those with the best bunches being retained and the others removed. If there is no danger of crowding the foliage stop the shoots two joints beyond the strongest bunch, taking off the other bunches at the same time. Rather than crowd the foliage stop at one joint beyond the bunch. If the shoots are strong the tying-down must be gradually and carefully done, and so liable are the shoots of late varieties to be twisted off that inexperienced persons had better leave the final disbudding till the selected shoots are safely tied into position. Where the old spurred Vines are unfruitful lay in short lengths of growth up the rods at intervals of about 2 feet, or still wider intervals if at all vigorous. This, in addition to other measures which will be suggested at the proper time, will perhaps effect a change for the better. Old Vines should not be too hastily condemned, as they may be made to bear excellent crops. Do not crop young Vines heavily, unless they be supernumeraries which are shortly to be cut out, or it will materially affect their future well-doing. Borders that have been covered with protecting materials during the winter should be cleared, and a liberal dressing of decayed manure pointed into the surface. A light dressing of artificial manure may also be applied with advantage. Inside borders should receive an occasional soaking of tepid water.

Tomatoes in Pots.—Many half empty houses, and also others at present filled with bedding plants, may be very profitably utilised for a crop of Tomatoes. The demand for these is fast increasing and will continue to do so, and those who grow more than they may require will easily find a market for their surplus fruit. No great skill is required in their cultivation, and they are very ornamental, the new small-fruited varieties, Vick's Criticism (Carter & Co.), being especially so, and are besides of excellent quality and great bearers. These with the help of wires 9 inches from the glass may be trained up the roof 12 inches apart, or rather more if there are plants underneath; and the ends of the house may be occupied with plants, either in pots or boxes, of Hathaway's Excelsior or other large-fruited sturdy-growing varieties. The former may be allowed to fruit and extend, but the latter should be stopped beyond the second or third bunch of

bloom, and will require strong stakes. In each instance single stems only should be trained and all side shoots removed. They will require abundance of water with supplies of liquid manure when in full bearing; they should have plenty of root room, and rough rich soil—two parts turfy loam to one of decayed manure being suitable. Seedlings should when the second leaf is formed be pricked off deeply, either singly in 4-inch pots, or in pairs in either 6 or 8-inch pots, employing rather light rich soil. Keep the plants in warm frames, shading from bright sunshine till they are established, and do not give the final shift till they are strong, allowing room in potting for a good top-dressing later on. Those who have strong plants may give the final shift at once, keeping the house as close as possible till the plants are established, after which more air may be given and shading will be unnecessary. A pot 10 inches in diameter is a good size for single plants, and a 12-inch pot or 14-inch is suitable for pairs.

WORK FOR THE WEEK.

HARDY FRUIT GARDEN.

APRICOTS have now sufficient foliage to protect the fruit, which is not very plentiful, and the coverings may now be dispensed with, except in a low, moist situation; but even in such cases the trees should be uncovered every fine day, so as to harden them prior to final exposure. It is hardly necessary to allude to the chinning of the fruit, except that there may be a few trees which have set more fruit than can be brought to maturity of a good size. Thin the fruit on young healthy trees to about 9 inches apart, but on old, unhealthy, and very vigorous trees a larger number should be allowed to remain until the stoning process has fairly commenced, otherwise during that process a portion may fall off and so render the crop too light. The great evil in fruit culture is overcropping, especially with the Apricot; the trees are being so exhausted with the crop as to be unable to mature the buds for the following season, and the result is comparative barrenness every other year. By taking early the fruit available for culinary purposes those remaining on the trees have a chance of becoming fine and well matured, and, what is equally important, the health of the trees is not impaired. Watch for caterpillars, and when any are observed rolled up in the leaves remove them or squeeze them with the finger and thumb. Attend to the removal of breastwood, and stop at the third joint all shoots not required for laying-in or extension. Peaches and Nectarines should still be protected on frosty and cold nights as a safeguard against blister, and in case that appears remove the worst affected leaves, promptly applying an insecticide upon the first appearance of aphides. If fixed coverings have been employed advantage should be taken of fine days to uncover the trees, and at the same time to partially disbud the forward growths, an operation that requires to be done gradually so as not to check the growth, as would be the case by disbudding the whole of the tree at once. Disbudding is an operation that needs some judgment and care so as to properly supply the trees with young shoots for next season. The Peach and Nectarine bear only on the previous season's growth; hence it is necessary to replace the bearing wood of this season by young growths for the next, retaining a well-placed growth at the base of the bearing shoot, and another at its extremity, which should be stopped at about the third joint unless required for the extension of the tree. Shoots not bearing should be cut back to a well-placed growth at the base. The extensions should be trained in 12 to 15 inches distance apart, and the shoots on last year's extensions reserved at about that distance apart to give the shoots for next year's bearing. Afford protection to Plum and Pear blossom in case of frost.

FRUIT HOUSES.

Cherry House.—Cherries are ripening rapidly and some are nearly ripe. The fruit must be kept dry, but the house must nevertheless have atmospheric moisture furnished by keeping the surface of the borders moist by damping with the syringe, air being admitted constantly, or condensation taking place will seriously affect the fruit. Damping the border is calculated to mislead as regards its condition, which at this stage must be quite moist, therefore if necessary a thorough supply of water must be afforded without delay. Tie in the shoots as they lengthen, and stop those not required for training-in at about the fifth leaf. Black aphides can be kept under by dipping the leaves or shoots in tobacco water. Ventilate freely on all favourable occasions, and when the external conditions are unfavourable recourse must be had to the heating apparatus to ensure a circulation of warm dry air. Netting will be necessary over the ventilators to prevent the birds attacking the Cherries. Trees in pots should be well supplied with water. Plum trees must be syringed to keep insect pests in check.

Melons.—Directly the fruit begins ripening lessen the supply of water at the roots, but not so as to distress the plants, for if the foliage has been kept clean and the roots in good condition the plants will bear a second or more crops of fruit. Atmospheric moisture should be withheld, and a circulation of warm dry air ensured, increasing the temperature to 70° or 75° artificially, and 80° or 90° with sun heat. Cut the fruits before they are very

ripe, keeping them in a fruit room for two or three days before sending them to table. Cracked fruits are produced by a close and moist atmosphere with too much moisture at the roots, which induce an excess of sap. If any fruit show a tendency to crack cut the shoot about half through with a knife a few inches below the fruit, and diminish the supply of water at the roots and in the atmosphere. Continue to fertilise the blossoms on successional plants, at the same time stopping the shoots one or two joints beyond the fruit. To secure a full crop take care to have a number of fruits on individual plants in the same stage of growth. Earth-up the plants with some rich rather strong loam after the fruits begin to swell off, ramming it down firmly, placing a little fresh slaked lime around the collar to prevent canker. Plants swelling their fruit should be syringed freely in hot weather at about 8 P.M., damping the floor several times a day, and in the evening with guano water, about 1 lb. of guano to twenty gallons of water. Shade only to prevent flagging; ventilate freely in favourable weather, commencing from 75° to 80°, increasing or decreasing it during the day as may be necessary, maintaining a day temperature of 80° to 85°, or 90° with sun heat, closing between 80° and 85°, and if an advance after closing be made to 90° it will lessen the necessity for fire heat at night; but it must be accompanied by plenty of atmospheric moisture. If thrips appear fumigate moderately twice on consecutive evenings, taking care to have the foliage dry, and for red spider dress the hot-water pipes with flowers of sulphur. Train out the growths in pits and frames. Still maintain a good bottom heat by linings, and employ thick night coverings, as the nights are yet cold. Sow seed for planting in frames and pits as they become cleared of bedding plants, potting off the young plants as required.

Cucumbers.—A clear growth is of the utmost importance in the successful culture of fruits. If aphides appear fumigate twice on consecutive evenings, having the foliage dry but the floors well damped. Red spider is almost sure to appear: remove the worst infested leaves, and keep the atmosphere charged with ammonia vapour by damping the floors in the evening with guano water, supplying the plants at the roots with the same about twice a week. The hot-water pipes may also be coated moderately with sulphur. Be careful that the plants do not suffer through insufficient supplies of water, always applying it at the same temperature as that of the bed. Plants in bearing all the winter will now be showing signs of exhaustion, and had better be removed and young plants put in without delay. Assist young plants which show signs of weakness by removing the staminate blossoms and the first fruits, stopping at every third or fourth joint, removing all weakly and superfluous growths. Shading will be necessary for an hour or two in the middle of the day when the sun is hot, especially houses facing south, but shade only to prevent flagging. Houses with the roof-lights facing east and west will not require shading. Little or no fire heat will be required by day, shutting the valves at about 8 A.M., and opening them again at about 5 P.M. Syringe the plants moderately between 3 and 4 P.M., keeping a good moisture all day by damping the floors. Sow seed for raising plants to occupy pits and frames, a fair bottom heat being first secured by using the less decomposed material from Seakale. Vine borders, or exhausted hotbeds, which with about a fourth of fresh material will afford all the bottom heat now required. The days lately though somewhat bright have been cold and the nights very cold, in which case close pits and frames as early in the afternoon as is safe, not allowing the temperature to exceed 90°, and employ good night coverings. See that a good bottom heat is maintained by duly renewing the linings. Prepare for planting out ridge Cucumbers under handlights, the plants being well hardened off previously.

PLANT HOUSES.

Store.—Few plants add more to the appearance of a conservatory during the advanced summer than Achimenes in baskets. The baskets should be well lined with sphagnum moss to prevent the compost being washed through in watering. The plants being first started in shallow pans in equal parts loam and leaf soil sifted fine. Plant in the baskets with the heads outwards all over the bottom and sides, and fill up with fibrous loam three parts, and one part leaf soil, with a sprinkling of sand, planting on the upper surface of the baskets. Grow the plants in a good light house so as to keep the plants short-jointed, training them to neat sticks as they advance in growth so as to cover the whole of the baskets evenly, the plants being turned round if necessary, and as they come into flower they may be transferred to the conservatory. Companion baskets may be formed of Selaginellas and Ferns, the sides of the basket and the bottom being covered with *S. stolonifera*, *S. umbrosa*, and *S. formosa*, with moderate size plant of *Asplenium Belangeri*, *Lomaria gibba*, *Adiantum cuneatum*, &c., in the centre. *Selaginella cœsia* being employed as an edging to the baskets. Permanent basket Ferns may also be employed for the same purpose, one of the finest being *Goniophlebium subauriculatum*, *Adiantum Capillus-Veneris*, *A. setulosum*, &c., and most of the *Davallias* as *D. bullata*, *D. dissecta*, &c., a Stag's-horn (*Platygyrium alcidorne*) in a pot having a fine effect. In removing Ferns to the conservatory care should be taken that the season's growth is matured, or they will suffer in a dauntly

and dry position. Gloxinias are among the most useful plants for summer decoration if they have been kept in a house with the temperature not much over 60° at night, and with abundant ventilation. Achimenes and Tydasas in pots or pans should have similar treatment. Nepenthes will be growing freely, and should be kept close to the glass and afforded slight shade with an abundance of water at the roots, which they will require once a day, syringing in the afternoon, and maintaining a moist atmosphere through the day. Any requiring more pot room should be afforded it without delay, but avoid overpotting, or the compost will become sour. A compost of equal parts chopped sphagnum and fibrous peat, rejecting the small parts, adding about fourth of potsherds broken small and charcoal in about equal parts, is suitable. Good drainage is essential. Neriums have flowers little inferior to Carnations, and are very fine for cutting, especially the white varieties, and a number of plants having been prepared in 6 and 8-inch pots, a few plants being introduced to heat to enable them to open their flowers, a succession will be maintained for months, introducing them at intervals. They require abundant supplies of water. Ardisias should now be in a medium temperature, having plenty of light and air to keep them stout and short-jointed, and when in flower should not be kept too hot and moist, or they will not set the berries freely upon which their decorative value depends. They are most useful in 6 to 8-inch pots. Seed may be sown in well-drained pans in sandy loam in heat. When up and large enough pot them off in 8-inch pots and grow them near the glass. Amaryllises that have flowered and require more root room should be attended to, as if delayed until the growth has progressed considerably they will derive very little benefit from the fresh material. Good yellow loam is the best material, adding a little sand, providing good drainage. They do not like light soil, light potting, nor too much root room. Keep them near to the glass, and afford water and weak liquid manure abundantly when necessary, and keep down red spider by syringing. Poinsettias that were cut back and started some time ago will afford cuttings 4 to 6 inches in length, which should be taken off with a heel of the old wood, inserted in sandy loam, and if kept rather close and not overmoist in gentle heat they will root freely. When rooted they should be potted and grown on near the glass, so as to keep them sturdy. The old plants may be shaken out when the shoots are not more than 8 inches long or the leaves may suffer and fall off, employing good turfy loam for potting, adding about a sixth of sand, keeping them rather close and shaded until they have recovered from the potting, when they should have light positions and not too much heat, but plenty of air. The most useful plants can be grown in 7 or 8-inch pots, and later-struck plants in 5 or 6-inch.

TRADE CATALOGUES RECEIVED.

James Veitch & Sons, Chelsea.—*Catalogues of New Plants, Bedding Plants, and Hardy Shrubs.*

Francis & Arthur Dickson & Sons, Chester.—*Catalogue of Bedding Plants.*

William Paul & Son.—*Catalogue of New Roses, Pelargoniums, and Phloxes.*

TO CORRESPONDENTS.

* * All correspondence should be directed either to "The Editors" or to "The Publisher." Letters addressed to Mr. Johnson or Dr. Hogg often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense. Correspondents should not mix up on the same sheet questions relating to Gardening and those on Poultry and Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

POLYANTHUSES (E. W. Mason).—Your letter has been forwarded to the gentleman to whom you refer.

CAMELLIA UNHEALTHY (D. L. G.).—You do not say when the shrub was transplanted, whether this year or last, and until we know this we cannot advise you of the best course to pursue.

GEOFFREY'S CALORIGEN (J. F. S.).—We have not had experience with this heating apparatus, but have been informed by those who are acquainted with it that it answers its purpose well.

LIVERWORT (Christine).—We are unable to inform you where you can obtain plants. They grow freely in moist shaded positions in many gardens, as well as by the sides of ditches and near old walls.

CHRYSANTHEMUM FRUTESCENS ETOILE D'OR (Sandgate).—If you consult the advertising columns of the last issues of the Journal you will find the information you require. It is an attractive golden yellow variety, and is valuable for decorative purposes.

LONDON STABLE MANURE (Weston).—If the straw is long and undecomposed keep it in the heap as you propose, and it would be the more easily incorporated with the soil if turned over at least once to insure partial and uniform decomposition.

CUCUMBERS (D. M., Halifax).—We are unable to inform you of the length

of the "fine Cucumbers grown by Mr. Meredith at Garston, near Liverpool, in 1871 or 1872." If any of our readers can supply the information we will publish it.

CRUSHED BONES (Dukes Broun).—Do not turn them but crush them small, in that state they are best applied to Roses or any other garden plants. By burning them their manurial power is greatly lessened, as all the nitrogenous properties, the animal matter, will be lost, and only the mineral remain in the form of ash.

ABNORMAL BUDS ON FILBERTS (E. Drey).—We do not think "the dead swollen buds a sign of coming blight, nor the breeding place of the red spider." They are the result of the wet season of last year when the growth was not matured. The buds commenced swelling in the autumn, and the sudden and severe frost following caused their destruction.

DOUBLE-FLOWERED TUBEROUS BEGONIAS (D. G. Roberts).—The following twelve varieties are some of the best both in colour and form:—Scarlet and orange, Altheaeflora and Mons. Malet; crimson, Clovis and Louis Bouchet; vermillion, Gloire de Nancy, La Vesuve and Marie Bouchet; rose, Comtesse H. de Choiseul and Roseflora plena; salmon, Madame Renand and Marie Lemoine; white, Empress Eugénie and Bridesmaid.

GREENHOUSE MANAGEMENT (Liverpool).—Our "Greenhouse Manual," price 10d., post free, contains reliable information on the propagation and culture of all popular greenhouse plants, but the majority of them require to be grown in structures from which frost is excluded. A house for plants without any provision for heating cannot fail to prove unsatisfactory to the owner, and there is no work published on the cultivation of plants for such a house.

BORDER PANSIES (L. J. K.).—No. 1 is striking by its large size and deep colour, but the flower is very rough; 2, blue, will be effective in masses; 3, 4, and 6, neither possess merit nor novelty; 5, very rich and neat, but small; 6, also rich, but not equal to others of the same colour in commerce. Your soil is evidently well suited for Pansies, and you have some pretty varieties as border flowers, but they are far inferior to the best named forms sold by the florists.

SEEDLING PELARGONIUM (A. R.).—All the petals had dropped off, so that we are unable to judge of the form of the flowers. The colour is very novel, the ground being white, each petal having a small reddish crimson blotch and flaked all over with deep rose precisely like a Carnation. The variety appears to belong to what is known as the show-decorative class; and if the plant is of good habit and floriferous, and the flowers are constant in the markings, it is likely to prove a popular market variety. A little gum should be dropped into the centre of Pelargonium flowers before packing them; then if they are placed in a box so that they are not shaken from side to side in transit they arrive in good condition.

CULTURE OF LIBONIA FLORIBUNDA (Phonetic).—To ensure the production of flowers growth should be freely encouraged during early summer, and subsequently well matured by being placed near the glass in a cool house with abundant ventilation. Water must be carefully supplied during the winter, and the plants are better kept rather dry than otherwise. Cuttings of the strong shoots may be inserted now in sandy soil in a warm frame, and strike readily. They should be potted off as soon as rooted in a compost of loam, leaf soil, and sand, carefully draining the pots. Full cultural particulars of this and similar plants are given in the "Greenhouses for the Many," published at this office, price 9d., post free 10d.

MOWING LAWNS (T. L.).—Lawns cannot be kept in good condition without being mown frequently. It is a great mistake to permit the grass to grow to a great length before mowing, as then more time is necessary in doing the work, the machine is apt to get strained, and the lawn never looks well. If you continue employing the machine you will find it the most economical to run it over the lawn at the least once a week at this season of the year. We never recommend implements. Both the scythes you name are alike good, and equally good work can be done with them by a competent workman, and both are equally difficult to beginners, especially in the important matter of sharpening. Purchase the most inexpensive of two "warranted" articles, and persevere until you can use it well.

SALTING WALKS (Idem).—Boards placed on edge will prevent the grass and Box being injured. Use the common agricultural salt. Apply it in dry weather. The longer it is visible on the walks the more effectual it is in the destruction, or, what is better, the prevention of weeds. The walks should be made white as if covered with a slight shower of hail. The price of salt varies slightly in different districts. A local dealer will inform you of the price in your neighbourhood.

GRUBS IN SOIL (J. Clements).—The grubs are larvae of one of the subterranean Tipulæ (Craneflies) possibly T. oleracea, but as several nearly resemble each other we cannot determine the species accurately without seeing the fly. Either in field or gardens these larvae are difficult to deal with. The application of a solution of ammonia to the soil, or in fields the working-in of gas lime, have been advised. Try watering with paraffin water, an ounce of the oil being dissolved in a gallon of water or kerosene. Burning the surface is a desperate but effective remedy. Rooks, starlings, and one or two other birds are the natural enemies of the larvae.

MELONS UNHEALTHY (W. W. E. W.).—We have seen the foliage assume a rusted appearance, like the leaves sent, when the plants have been grown in too light soil; but it is more often the result of air not being admitted to the structure in which the plants are grown sufficiently early in the morning. If you will inform us of the nature of the soil employed, also the night and day temperatures of the house, with the bottom heat afforded the plants, we shall be better able to state the cause of the injury and to suggest a remedy.

RENOVATING CEDAR TREE (New Subscriber).—We presume the roots have not penetrated stagnant soil, but if they have deep draining is necessary. If wet soil is not the cause of the sickly appearance of the tree it is no doubt suffering from want of nourishment, and you might advantageously follow the plan successfully adopted by Mr. William Paul of Waltham Cross in renovating a Golden Queen Holly, and described in the Journal last year. Concluding that the tree was starving, he drew a circle of 20 feet, taking the bole of the tree for its centre, drove a sharp-pointed iron rod about as thick as one's finger 3 feet into the ground, filling up the hole thus made with rich pulverised manure. This was done in the winter. The following spring the growth was more vigorous, and the leaves larger and of a better colour. The third year's growth after this manuring the tree was in perfect health, with rich green and brightly variegated foliage.

DESTROYING PLANTAINS ON LAWN (Idem).—If you procure some sulphuric acid and place it in an old stone blacking bottle with a wire attached

to carry it about, and with a notched stick drop one drop of the acid in the heart of each plant, it will quite destroy it. A stick well notched will hold sufficient acid to kill three or four plants if they are close together and can be "doctored" quickly. This is a quick and certain cure, but must not be applied by women or boys, as care is necessary that the acid only touches the plants intended. Even the stick should not be rubbed on the grass, or it will leave unsightly marks, nor of course must the acid touch the hands, garments, or boots of those using it. It is only effectual in killing such deep-rooted weeds as Dandelions and Plantains when dropped quite in the centre of the plants. The plants so dressed die immediately, and the next day the residue of them can be swept off the lawn.

CUCUMBER PLANTS FAILING (*A Practical Gardener*).—The hot-water piping in your narrow pits is excessive, and the roots of the plants have doubtless penetrated through the tan to the rubble and become dried or burnt. Take out some bricks from the pit wall and permit some of the heat to escape into the house. This can be regulated with sliding shutters. Water the beds very copiously, so that every particle of the soil is moistened, and at the same time add top-dressings of generous soil to promote surface roots, which will in some degree compensate for the loss of healthy roots at the bottom of the bed. You will find it necessary to shade the plants for a time, to syringe freely, and otherwise maintain a moist atmosphere to encourage fresh growth and induce renewed vigour.

VINES TOO LUXURIANT (*A Constant Reader*).—The border is too rich in animal matter. We do not approve of burying dead pigs and horses in Vine borders, although there are instances on record where the Vines growing in such borders have produced good crops. By removing the surface soil of the border down to the roots, but not injuring them, and adding fresh loam with half a bushel of bones to each carload of the soil, and a liberal admixture of wood ashes, pressing the whole rather firmly, you will induce the formation of surface roots, and shorter-jointed wood will then follow. It is important also, especially as the glass is not clear, that the laterals be very thinly trained, so that they have all the light possible, with air, to mature them. If the rods are not more than 3½ feet apart, distances of 2 feet between the laterals on both sides of the rods will not be too great. We presume the border is well drained; if superfluous water cannot pass away freely the Vines will not flourish.

LIQUID MANURE (*F. J.*).—Half a peck of soot and the same quantity of cow or sheep's dung placed in a tub holding 30 gallons of water will form an excellent liquid manure for your purpose. It may be diluted with about three times its volume of water when applied to the plants. You may advantageously add twice the bulk of superphosphate of lime to the nitrate of soda and salt before applying the second dressing to your lawn.

PANSIES FOR EXHIBITION (*Idem*).—Both the Show and Fancy varieties are suitable, and at most shows there are separate classes for them. You will find full information relative to their propagation and culture in our Manual on "Florists' Flowers," which can be had post free for 4½d. The following are good varieties:—*Show varieties*: *Sels*.—Demetrius, Duke of Edinburgh, Dax, Erebus, Golden Lion, Letitia, Walk Beauty, Lochnager, Pirbright Beauty. *Felino Grounds*.—Alexander Brodie, Allan Ramsey, Captain Clute, Defoe, Lochiel, Robert Burns, Senator, Tom Carlyle. *White Grounds*.—Jane Grieve, Junc, Lavinia, Leith Walk Model, Miss Adamson, Mrs. Hampton, The Made, Village Maid. *Fancy Varieties*.—Andrew, Dougall, Annette, Angus McLeod, Annie Cuckoo, Duchess of Edinburgh, Edith, E. J. Lowe, James Grieve, John Currie, Leith Walk Hero, Louise, Maud, M. H. Miller, Miss Closely Moleworth, Miss Murray, Miss Wallace, Mrs. Dewar, Mrs. Grieve, Robin, Sunray, Thomas Grainger, William Melville, William Old, and Zephyr.

ASPHALT WALKS (*G. G.*).—Take two parts of very dry lime rubbish and one part coal ashes, also very dry, and both sifted fine. In a dry place on a dry day mix them, and leave a hole in the middle of the heap, as bricklayers do when making mortar. Into this pour boiling hot coal tar; mix, and when as stiff as mortar put it down 3 inches thick to form the walk. The ground should be dry and beaten smooth. Sprinkle over it coarse sand; when cold pass a light roller over it, and in a few days the walk will be solid and waterproof. An old gravel path will only require to be swept clean; a new made one to be well beaten and rolled. Choose a warm day, the warmer the better; let the tar be boiling hot; use the common, long-handled, iron-bound tar brush, and iron kettle holding about a gallon, for the purpose of taking only so much tar from the boiler at one time as can be used in about a quarter of an hour, and paint over with a good coat. Let a lad follow with dry sifted sand, throwing over enough to prevent the tar sticking to his feet, and then go over with the roller. Two men tarring will employ a lad to follow with the sand, and another to attend the fire and supply the tar as fast as used. This repeated every three years the surface will become quite hard, and the paths will always be perfectly dry and pleasant to walk upon even in the worst of weather. The walks are made soft by the sun if the tar has not been made quite hot when used.

TRAINING AND STOPPING MELONS (*Subscriber*).—Three leaders from each plant are too many; two are quite ample, and if you require a few fine fruits rather than a greater number of small or medium-sized Melons, one leader would be better than two. The leaders should be stopped when they reach within a foot of the top of the trellis, and fruit will show on the laterals that will then be produced. As soon as the female flowers are seen stop the shoot at a joint beyond each, and when the flowers are expanded fertilise them. It is important for ensuring a regular crop that the flowers be as nearly of the same age as possible when fertilised, as it frequently happens that when one or two joints swell much in advance of the others that the latter, and most numerous, shrivel; therefore, remove the one or two precocious flowers now showing. The side shoots on the main stem may be pinched to one leaf. If, as we understand you, your trellis is only 4½ feet wide, four joints to each plant would be sufficient for a crop, but more may swell until of the size of pigeons' eggs, then retain only those that are as nearly as possible of the same size and swelling regularly and freely.

SOIL FOR COLEUSSES (*Perk H.H.*).—A compost formed of about two-thirds of turfy loam, the remaining third of peat, leaf soil, and old decayed manure, with a liberal admixture of sand and crushed charcoal, will grow the plants well. They are stove plants, and should be placed as near the glass as possible in a house having a night temperature of 65° to 60°, a moist atmosphere being maintained in the daytime, when the temperature may increase with ventilation to 85°. The plants should not have large shifts, and should be repotted before the roots are firmly rooted, until they are placed in their final pots; a good index for potting is when the roots protrude through the drainage. When they have the final shift, little bone dust may be mixed with the soil, about a 6-inch potful to a bushel of the compost will do, potting

rather firmly and not filling the pots too full of soil, as it is important that sufficient space be provided for holding water to penetrate through the dense mass of roots that will form when the plants attain a large size. A very slight shade will be needed after each potting when the sun is bright, but the less shade the better when the plants are established. They should not be syringed except the water is perfectly clear and leaves no sediment, but the pots should be syringed frequently in hot weather, and the stage on which they are placed kept moist. When the pots are quite full of roots weak and perfectly clear soot water will deepen the colour of the foliage. Heat and moisture are prime essentials in the culture of these free-growing plants.

NAMES OF PLANTS (*Heavy Watkins*).—Your plant is probably an *Impatiens*, and if you will send a flowering spray at the proper time we will endeavour to give you its specific name. It is impossible for anyone to name a plant correctly from small seedlings. (*G. O. S.*).—*Prunus triloba* (*Inquirer*).—1, *Amelanchier vulgaris*; 2, *Dianella aspera*; 3, *Saxifraga cespitosa*; 4, *Acer polymorphum atropurpureum*. (*W. W. A.*).—No. 1, *Mimulus undulatum*, *Solms*; *Bryum ligulatum*, *E. B.* Wax-leaved Threading Moss. This Moss when growing in moist shady situations very much resembles the Filmy Fern, and has often been taken for a small Fern. No. 2, *Alchemilla* (*Aphanes*, syn. *Aphanes arvensis*, Parsley Piert. This plant abounds in stubble fields on a sandy soil, and formerly was in great repute among herbalists as a sovereign remedy for the gravel, and at this day it is highly recommended. No. 3 is probably *Stachytarpheta jamaicensis*; certainly not *S. mutabilis*, which has orange-coloured flowers. (*W. H. Myers*).—A, *Lonicera tatarica*; B, *Amelanchier florida*. (*J. S.*).—*Ranunculus amplexicaulis*. (*J. H. F.*).—*Dodecatheon Meadia*, variety *elegans*. (*M. Deperdum*).—The name of the plant you sent is *Saxifraga granulata*, not *granulata* as misprinted last week. (*Reader*).—We do not undertake to name florists' varieties, but the *Fuchsia* resembles Covent Garden White; it is *Oncidium papilionicum*; the other specimens of Ferns are insufficient for identification. (*John Kendallworth*).—*Alchemilla vulgaris*.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

THE MANAGEMENT OF WOODLANDS.

(Continued from page 346.)

IN continuation of this subject we must request the home farmer to pay particular attention during the growth of the recently planted firs, so that any decayed or diseased plants may be removed. As soon as the poles are marketable (which they will be by taking the best at the end of eleven years, when set at the distances and in the manner as previously stated) commence by thinning and selling, looking only for a quick return. We believe a great mistake is made by many, who allow the plantations to go on unnoticed until the young trees are neither fit for one purpose nor the other—not large enough to pay for sawing into rails, yet having passed the size for hop poles. In accordance with the planting previously stated the plants will stand at 36 inches by 30 inches; we will, therefore, furnish a statement of the cost of planting, and also the mode of taking and the value of the crop per acre. There will, however, be some difference in the cost, being reduced in case of the use of steam power instead of manual labour; there will also be some differences in certain districts as to the cost of labour, and also of the value of the poles when sold. Still our object will be attained by making the statement of costs and returns, so that the home farmer will have some guide as to the prospect of profit and advantage under the system offered to his notice. Our calculation per acre, made some years since, is as follows:—

Expenses:—	£	s.	d.
Trenching 18 inches deep at 1s. 8d. per rod	14	0	0
5250 plants, at 2s. per thousand	6	11	3
Planting by spade	2	10	9
Hoing, weeding, &c.	1	0	0
	£24	2	0
Interest on the outlay of £24 2s. at 4 per cent. for sixteen years	15	9	4
Failures allowed at 10 per cent.	7	15	0
Total expenses of plantation	£47	6	4
Commence cutting by taking the best at the	£	s.	d.
11th year, cut 600 poles, at 3d. each	7	10	0
12th year, ditto ditto	7	10	0
13th year, ditto ditto	7	10	0
14th year, ditto ditto	7	10	0
15th year, cut the remaining 2850 poles, at 4d. each	47	10	0
Value	77	10	0
Cost	47	6	4
Balance	£30	3	6

The annual profit being 38s. per acre.

As, however, the plan of quick returns, as just stated by the growth of only larch firs, requires much constant attention, some

growers may object to it for that reason. We will therefore allude to a plan whereby a less number of plants may be set and the crop taken at the end of twenty-five years. In this case rows of sweet chestnut, hazel, ash, &c., may be planted with the view of remaining for the growth of underwood after the crop of trees had been sold off. We advise the planting in the following way:—Larch fir plants at intervals of 8 feet and 6 feet alternately, and at 8 feet apart in the lines, the 6 feet space being planted with underwood plants at 8 feet apart. Then at some intermediate time each line of poles at 8 feet apart may be cut and sold, also half the poles in the remaining lines, thus leaving the lines of firs standing for the main crop at 6 feet apart each way; the underwood plants will also be found standing at the same distance. According to this plan there would be left at the end of twenty-five years about 6 poles to the rod, which at 1s. each would give £48 per acre, being a large return in addition to the valuable plant of underwood left on the land. There is yet another plan of planting firs, and pines or cedars, to which we wish to call the attention of the home farmer, more particularly where large trees are sought for. In such case we should plant three sorts in alternate rows, or rather at right angles. The sorts we recommend are the *Cedrus Deodara*, the Douglas fir, and the common larch fir; the first row to be *Cedrus Deodara*, with larch alternately at equal distances; the second line all larch; the third line Douglas fir, with larch alternately, at the same distance apart; and the fourth line with all larch plants. Then proceed with *Cedrus Deodara* and larch as for the first line, and so on throughout the plantation, the distance recommended for the plants being 6 feet apart each way. In thinning out the larch they should remain until worth about 1s. each, which they would probably be at about eighteen years' growth, thus leaving the *Cedrus Deodara* and the Douglas fir for the main crop. These sorts grow to an immense size and height if properly set out at the right distance, which distance as above proposed would be 12 feet from plant to plant each way. If, however, very large timber was required these may be thinned out, the remainder being left at 24 feet by 12 feet, or at 24 feet each way.

The *Cedrus Deodara* and Douglas fir have not been cultivated for profit in this country we believe to any extent, but only planted for ornamental purposes. In the latter respect they are comparatively well known; we are, however, justified in introducing them to notice as profitable timber bearers through the high encomiums passed on them by the author of a work called "Pinacea," named Nelson, who was not only a great enthusiast in all matters relating to forestry, but had a thorough practical knowledge of his business, as he conducted the Government nurseries at Rhinefield in the New Forest, where firs and pines were raised for the planting of enclosures in the crown lands of the forest. This work, "Pinacea," is the soundest practical treatise on fir and pine culture which we have met with, and we can recommend it with great confidence to the home farmer, and also to the notice of noblemen and gentlemen who take an interest in the woodlands on their estates. We therefore, in justification of our recommendation for planting certain pines and firs, refer to the writer's opinions on their growth in their native habitats, and his experience as to their adaptation to the soils and climates of the United Kingdom for timber-growing purposes. Relying upon these statements we feel justified in assuming that their growth here would be profitable, not only as regards the bulk of produce in timber, but its utility for all ordinary purposes, for the wood of these trees has not only the durability of the oak, but is free in working, does not warp, and never suffers from the ravages of wood vermin or insects.

In order, however, to obtain plants to any extent of these cedars and pines they must be raised from seed, as they cannot at present be obtained from the nurseries except at a very high charge, they being grown and sold for ornamental purposes only. In growing plants for home use they should be in soil and climate similar to that whereon they are to be planted. We have been over much woodland lately, which being a strong clay soil is too wet in some parts, even for the growth of oak timber successfully; it should therefore be drained by open dykes and trenches of varying depth, according to the outfall. These should be not less than 8 feet wide at top, because from the action of moles and other causes they are very liable to become injured; and every eight or ten years, when the underwood is cleared away, they should be scoured and made effective. Draining with pipe tiles in the woodlands would soon become choked and useless; woodland, however, after draining, where the timber plants are deficient and the growth stunted, may well be planted with a few *Pinus insignis* or Scotch fir for shelter. Another important matter we have found to be, that when the underwood is cut no heirs or saplings should be left for timber which have not originated direct from the acorn, for stemmers left will never make timber for profit.

In concluding our subject we must make a few general observations based upon our own experience. Trees left for timber in the woodlands should never be lopped or shrouded. We prefer when we find some saplings growing with many spurs or branches attached to the body of the trees, instead of being lopped they

had better be cut, and thus make room for young heirs properly selected, as these only pay for remaining. Nor should trees ever be left within 20 feet of the boundary fence. In exposed situations we have sometimes left the underwood on the boundary 20 feet in width to grow for twenty years, to keep the south-west winds out of the woodlands, which greatly accelerates the growth of timber.

WORK ON THE HOME FARM.

Horse Labour.—This has been going on almost continuously, for the showers of rain experienced have not been sufficient to prevent the horse labour being proceeded with. In some cases, although the horses could do no good on the land during a wet and rainy day, still the rains have kept the fallows supple and kind, the roller not having been so much in request as it would in case the drying winds had continued. Where the seedtime for Lent corn has been delayed it is well that it should be finished by the 1st of May; for although we may obtain a bulk of straw by sowing up to the middle of May, yet the yield in ordinary seasons will be deficient in comparison with early sown corn. Still, we may expect a useful crop of mixed barley and oats if sown up to the middle of May, the white Waterloo oat being the best for a crop in late sowing. To a great extent the present spring has been an exceptional one, for although the foulness of the land caused more horse labour than usual, yet the weather upon the whole has been favourable; the root crops fed off by sheep have been cleared away earlier than usual, and this has to a great extent favoured early sowing. The seeding of the land for mangolds, carrots, and parsnips has been commenced earlier than usual this year, much land having been well finished off up to this date. There is still plenty of time to continue sowing for these crops, especially carrots and parsnips, for these crops if sown too early are apt to be overrun with weeds, causing a heavy expense in hoeing. We have found that the best seedtime for these crops is about the middle of May, because where the seed vegetates quickly it receives no check in the growth of the young plants, and we reckon that one hoeing is saved, and with a much greater certainty of obtaining a regular plant. The carrot seed should be prepared for drilling by having the burr or husk rubbed clean and winnowed; it will then drill as freely and with as much regularity as swedes or mangold seed. We have found that in mixing carrot seed with the manure in the drill a regular plant is not at all times secured. So many pieces of the rye, trifolium, and vetches have been destroyed by the slug and the severity of the winter that the seeding of the land again has become an important question. Where the land is clean it may be put in with mangold seed after being ploughed and worked fine. Trifolium may also be sown after being ploughed shallow and worked down fine, and rendered firm by the use of the ring roller, and when the seed is sown on the roll it is sure to be buried a regular depth, so essential to obtaining a regular plant. It is, too, of great importance as a fodder crop, for if sown now it will be ready to cut for horses or cows in the months of July and August. Much of the wheat plant is very thin and irregular in various parts of the country, and the home farmer in many instances will be somewhat perplexed as to the best plan to pursue—whether to plough and reseed with other crops, or retain it and trust to the season to give a crop. We have sometimes known a good average yield of grain when the plant has been very thin and looked unpromising even up to the middle of the month of May. We recollect an instance in the spring of 1842, we had our wheat plant so thin that after it came into ear we could walk in it without treading on the plants. The yield, however, in this case at harvest far surpassed our most sanguine calculations, for we had over 5 quarters of capital grain per acre average throughout our crop; so that it depends very much upon the yield as to the crop to be obtained, yet there is of course a much better chance for a good crop when there is a full plant.

Hand Labour.—Some men will now be employed in sowing the clover seeds, and it is always important in sowing broad clover to refer back to what grass seeds were grown upon the land in the former rotation. There is, however, a great difference of opinion about the cause of the failure of broad clover, hence the advisability of mixing some other kinds of seeds with it. One plan gaining favour is to sow the giant saintfoin seed mixed with it, but the foreign seed should be used. The advantage claimed for this mixture is, that it takes well on the mixed soils and makes up deficiencies in case of loss of the clover plant. At the same time it answers the purpose of holding up a heavy crop of clover and opens it so as to make into hay quicker when cut, and it also comes for a second cutting with the clover, which our common saintfoin will not do under ordinary circumstances. Shepherds must now push forward the lambs, for they are selling at exceedingly high prices, and in consequence will pay well for liberal and expensive feeding with cake and cracked beans. The food for them on the arable land will now be rye, trifolium, and Italian rye grass, as the water meadows are finished and laid up for hay. Broad clover and the mixtures we do not like for folding off for the ewes and lambs. We should prefer grass of the second year's growth, called old lea, where a proper mixture of grasses had been

need, for we prefer a mixture of Dutch and Alsike clover with Timothy and Pacey's rye grass, and the food in the second year will be much more healthy food for either sheep or dairy cows, the latter being changed daily whilst feeding the meadows.

BREEDING FOWLS—FERTILISATION OF EGGS.

I AM happy to give the results of a tolerably long experience for what they are worth, in answer to "F. M. M." page 325. It is a great mistake to suppose that "if a cock is put with five or six hens at the commencement of the laying season for a few days, that is all that is necessary to render all the eggs laid fertile." On this point your correspondent has received erroneous information, which if followed must lead to inevitable failure. It is absolutely necessary that the cock should be kept continually with the hens, so much so that if he is occasionally taken away for exhibition for two or three days nearly half the eggs laid by the hens will be found to be unfertile. If a cock be removed altogether I have rarely found the eggs of the hens laying regularly fertile beyond the twelfth day. If the hens be only laying occasionally, or if there have been only one or two with the cock, and he a vigorous bird, it is possible for them to be fertilised after even four or five weeks' separation, but never, I believe, after the hen has once been broody.

The second question asked by "F. M. M.,"—viz., if hens be taken from one cock and put with another how soon the eggs will take after the second—is by no means so easy to answer. The idea that the former bird will only "affect the first egg, and perhaps the second laid after the separation" is obviously erroneous, for it is a well-known fact that if a hen which has been with no cock at all be placed with one, the fourth day is the very earliest on which a fertile egg will be laid. We can give no sort of rule for the time of change, but generally it takes place after eight or ten days in the case of a hen laying regularly. It is well known, however, that the influence of the former bird does not cease at once, but often partially affects the produce for a long time. The case of the mare at the Zoological Gardens will occur to memory, which had a foal by a zebra, and subsequently several by a horse, yet all the latter had traces of stripes.—O. E. CRESSWELL.

HALF-GROWN CHICKENS.

THE time has come, or at least approaches, when those poultry keepers who have been fortunate in rearing early broods will have half-grown chickens. They require proper management in this stage as well as in the coop, but not such constant attention. We are often asked whether a hen should be taken away from her chickens before she leaves them of her own accord. No general answer can be given to such a question, circumstances of which common sense must judge can alone decide. At times a Bantam which has reared larger birds will continue to tend them for weeks when they are twice her own size: this is obviously useless. Again, a Cochins hen will often begin to lay while her brood are very young, and yet continue to cover them at night: this to delicate chickens early in the season is an immense advantage, and if possible such a mother should be left with them.

Chickens should not in any case be taken straight from their mother in the coop to a fresh run. This bewilders and makes them wild. Long before it is time for her to leave them she should be allowed to run loose with them through the day, and at night be put into the house which they are destined to inhabit when she has left them. This will break the change, and they will not feel her removal. The freedom of the hen is a great protection to her brood from vermin. We have lately suffered terribly from the depredations of hawks, which have invariably attacked the broods of cooped hens and never dared to come near those at liberty. When at large, too, the mother will scratch for her chickens and teach them to provide for themselves. A little wandering always seems to brace them and give them strength; and daintiness of appetite, which is sometimes a trouble with young chickens, now passes off. Advantage should be taken of this to accustom them to the plainest fare. In warm weather while they roam about a little judicious stinting in food for a day or two may help to give them an appetite, and then there should be no difficulty in keeping them growing and healthy on three or four meals a day. There is no time in the life of chickens at which stimulating diet is so bad as this period. It will infallibly cause the pullets to lay tiny eggs two months before they should commence laying, and so stop their growth, and in cockerels will cause leg weakness. It is better in the case of birds eventually destined for exhibition or stock to separate the sexes when three months old. This precaution is not necessary in the case of chickens which are to be killed, and in the case of the smaller varieties may often be dispensed with; indeed, where premises are small we would always rather keep them all together in a fair-sized run than confine either sex closely.

There is one more point to be looked to—viz., perches. We have before given our opinion, not hastily formed, that the best perches are small poles that the birds can clasp well. Heavy

Asiatics will do just as well or better on a clean straw litter, and Dorkings are all the better for being kept off perches till they are four months old. Other birds may perch as soon as they leave the hen on such poles as we have described. For Hamburgs and Bantams they may be 3 or 4 feet from the ground, for the heavier breeds not more than 18 inches. These hints should enable a poultry keeper to keep the hope of his yard in good progress through May and June. When great summer heat comes on a little more advice may be needed to enable him to prevent them from flagging and their growth stopping, which in shadeless places and on dry soils sometimes causes difficulty.—C.

THE IMPROVEMENT OF POUTERS.

BRING an old lover and intimate friend of the Pouter, it has occurred to me that another tribute in testimony of its worth may be fitly raised at the present time by its ardent admirers in the form of subscription silver plate. Such a measure, I have every reason to believe, will stimulate the further improvement of pre-eminently the most noble of Pigeons, and at the same time be an acceptable trophy to successful breeders. With this object in view I have drawn up the following rules, which I beg to submit for the immediate consideration and patronage of all Pouter fanciers.—NORMAN HILL.

BREEDERS' SUBSCRIPTION CHAMPION PRIZES FOR POUTERS.

A silver cup or piece of plate for the best standard pied Pouter cock bred not earlier than 1880. Also a silver cup or piece of plate for the best standard pied Pouter hen bred not earlier than 1880.

1. Birds competing must be bred and owned absolutely by the exhibitor, who must be a subscriber to the above prizes, otherwise ineligible.

2. These two prizes not to be extra, but to be the first and principal prizes in the respective classes at any show; to be transferable—that is, held by the last winner until the final and triple award.

3. Competition to be held twice annually at two of the principal shows in the United Kingdom until the same bird receives the highest award on three different (not necessarily consecutive) occasions.

4. Birds to be judged in a pen of not less area than 3 square feet.

5. The judge or judges of these champion rivalries to be voted for before each show by the subscribers only, who can express their desire or choice on receipt of schedule, and not later than is the entry form, in returning it to the secretary of the show.

6. Any attempt at an infringement or evasion of the above rules to disqualify from further competition for these two prizes.

Subscriptions 10s. 6d., to include both prizes, payable before the 15th May next, will be received by F. Esquilant, Esq., 4, Effra Road, Brixton, London; or by Captain Norman Hill, Edina, Ealing, Middlesex. Subscribers' names will be published with total amount of the subscriptions.

VARIETIES.

AGRICULTURAL PROSPECTS IN IRELAND.—At a recent meeting of the Duchess of Marlborough's Relief Committee, held in Dublin, most favourable accounts were received from the provinces as to agricultural prospects; the fruit trees especially were reported from the midland and southern counties as showing a luxuriant blossom unknown for several years. Great distress, however, still prevails in the west, and the people there will for the next two months require aid.

—THE SALE OF HOME-GROWN MEAT.—An agricultural and industrial conference upon the existing system of selling home-grown meat, which was commenced on the 8th of March last and adjourned, was resumed last evening at the Market Hall, Upper Thames Street, under the chairmanship of Mr. H. Kaines-Jackson. At the previous meeting a Committee had been appointed to report generally upon the subject, and the result of its deliberations was presented last week. The Committee expressed itself in favour of the establishment of public abattoirs with cold storage chambers, and advised the construction of two cold storage chambers as an experiment in connection with abattoirs now in existence, one in London and one in the country. Another recommendation was that all live stock consigned by the farmer should be dealt with by weight instead of by the prevailing unsatisfactory guesswork system. It considered also that the erection of cold storage chambers would materially facilitate the establishment of a system of direct dealing between producer and consumer. In addition to a more uniform, certain, and equitable return for the producer it was believed that a great deal more could be made of the so-called offal than was done at present in this country, and producers and consumers would alike be benefited. The Committee also advocated an alteration of the present mode of selling meat—viz., by the sides or quarter, recommending instead the division into three grades of prime, second, and third qualities, each of which, if required, should be sold by itself. The Chair-

man, in opening the proceedings, said that the object of the conference was to give the people cheap meat, as they had obtained cheap bread, and the whole subject turned upon the preservation of food in a good state in the summer as well as in the winter.

SIGNS OF THE TIMES.—The signs of the times are hopeful, and such as to lead us to expect that we have now entered upon a cycle of good years, which, according to the compensating law of nature, follows a series of unfavourable seasons. Many years have elapsed since we had such favourable spring weather for the cultivation and seeding of the land, and if vegetation has not been rapid, there is every reason to expect that grass and growing crops will be abundant during the coming summer. Cattle have advanced in value from £2 to £3 a head compared with this time last year, and the demand for good stock is very brisk. Sheep are also notably dearer, and wool has advanced from 20 to 25 per cent., with the prospect of a good trade through the summer. Butter also brings high rates, and although it may become cheaper as it becomes more abundant, there is every reason to expect that it will maintain a value sufficient to remunerate the dairy farmer. The American scare is dying out, as other scares have done in bygone years, and Irish and English graziers have learned to look with equanimity upon beasts fed on the other side of the Atlantic standing beside their home-produced stock in the Liverpool and London markets. The conviction is growing that with general good trade in England the consumption of meat will become almost illimitable, and that provided the live stock of these countries are improved, or their present excellence maintained, they will always be able to hold their own against all comers.—(*Irish Farmers' Gazette*.)

THE GRAIN CROP OF CALIFORNIA.—The grain crop of this State has attained its present production of forty million bushels from the first attempt to raise wheat for home consumption only less than thirty years ago. The first bag of flour made in California was at Horner's mills, Union City, in 1858. In 1868 Mr. Horner raised twenty-two million pounds of potatoes, which he sold for three cents a pound. This enterprising man still lives on his ranch in Alameda county. He went to the Pacific coast in 1846.

CURD, WHEY, AND CHEESE.—In the process of making cheese the great bulk of the milk-sugar is not retained in the curd, but passes off in the whey; so it follows that if the whey is imperfectly got out a too large portion of the milk-sugar is also retained in the cheese, and it is this that is the cause of sweet cheese. This sugar, too, or a portion of it, enters into fermentation in the cheese, forming amongst other products carbonic acid gas, which, in trying to escape, causes the cheese to heave and become porous. An excess of whey causes annatto, that is used for colouring the cheese, to be unequally distributed, so that the cheese is not a uniform colour; or the lactic acid formed from the milk-sugar has a destructive effect on the colouring matter later on, causing it to fade and the cheese to become a bad colour. The presence of the whey and the fermentation begun by the milk-sugar causes the cheese to decay without ripening in a manner that makes it a very disagreeable and unhealthy article of food. The necessity of getting out all the moisture, over and above the quantity which the cheese may safely be allowed to retain, will now be apparent. This is effected, first, by the cutting of the curd; second, by pressure; and third, by a moderate amount of acidity where such is employed. Acidity in cheese-making is the most effectual means of expelling the whey, but it must be employed with great caution, for though it is a capital servant it is a bad master.—(*From "Dairy Farming," by Professor Sheldon, for April*.)

DEVELOPMENT OF THE AUSTRALIAN FRESH MEAT TRADE.—The success that attended the recent attempt to import Australian fresh meat to this country has had its effect in the colony, and efforts are now being made to develop the trade on a large scale. As soon as suitable vessels can be prepared for carrying the frozen meat we may expect a large importation, for excellent mutton and good beef are to be had in practically unlimited quantities. An official return from Queensland alone shows that there are 6,000,000 sheep and 3,000,000 head of cattle in that colony, which, after providing for all home wants, would leave about 2000 tons per week for exportation. The other ports of Australia could supply a great deal more than that.

SPREADING THE BROOD.

SPREADING the brood is another of those seasonable subjects upon which it is desirable that I should enter a little more fully than I have hitherto done. The very general directions I have as yet given are quite likely, judging from the letters I am daily receiving from private correspondents, to be followed in such a rash manner as to be hazardous to the prosperity of the colonies operated upon. Now I know of no operation among bees that requires more caution and tact, and yet is of such advantage when properly done. Indeed the possibility of doing it at all is

one of the chief advantages of moveable comb hives. A word as to the object of thus interfering with Nature, as some would call it. We are in the middle of spring; a few weeks will bring us right into the honey harvest; but many of our stocks are in such a backward condition that it is evident they will not be fit for supering when the time comes. Our strong hives without any special attention will probably be up to the mark in time, but we have set our hearts on having a swarm from each of these, and still have them fit for supering when clover blooms. In either case a special stimulus is necessary, and that in addition to the daily modicum of sugar syrup such a stimulus is supplied in the judicious spreading of the brood. It is thus an operation which need only be performed when we wish to have the greatest possible increase in population within a limited time.

As to the best method of doing it I must commence with one or two cautions. First, it is of little use attempting it in hives that are short of stores unless there be either a steady ingathering from flowers or a regular supply of syrup given. If the queen is to be tempted to lay twice the regular number of eggs it is evident that provision must exist for the nourishment of the increased family. Secondly, it is positively injurious to attempt it in hives that are too large for the populations they contain, for in this case the almost inevitable consequence will be the chilling of the brood with its concomitant evils. To meet such cases let it be understood that abundant food either natural or supplied must be ensured during the process, and that all hives to be operated on should be contracted by division boards till the bees can cover all the combs left. When such conditions have been secured we are prepared to begin. The process divides itself, if properly carried out, into three parts. First, we must deal only with the combs already in the hive. These should be examined every four or five days, and, of those containing brood the one having least should be shifted into the centre. In this case there is no spreading of the bees, and as the queen has already been using these combs she will the more readily proceed to extend the circle of brood already set there. This should go on till all the combs are nearly filled with brood. Care must be taken to uncup all sealed honey found in any comb thus to be transposed. This will be an additional stimulus, and at the same time afford more room for egg-laying. Only when the combs are actually crowded with bees should the second part of the operation commence—viz., the introduction of fresh combs. This may be necessary even before the original combs are properly set with brood; if so, the fresh comb should not be placed among the brood but only inside the division board, its present purpose being to give more room. Here it will get warmed, cleaned out, and perhaps partly filled with honey before it is needful to shift it to the centre. As fast as the bees become crowded fresh combs should be thus introduced. Instead of combs foundation may very profitably be used, but only when the brood chamber is well filled with bees; for it is evident that a mere sheet of wax creates a larger gap to be filled by the clustering bees than a finished comb does, and thus increases any risk of having the outer combs of brood deserted and chilled. If sheets of foundation are used they should be inserted late in the day, so that the cells may be drawn out before the heat of another day.

At last we have our brood chamber extended to its full size and crowded with bees and brood in every comb. This brings us to the third stage of brood-spreading—viz., in preparation for supering, for I shall leave out the case of hives intended for swarms. Before adjusting the supers we make a final overhaul of the combs with a view to arranging them, so as to secure on the one hand that the queen shall have an inducement to go on laying uninterruptedly for several weeks to come, and on the other that the bees shall have as little opportunity or inducement as possible to store honey in the body of the hive. This we manage thus:—We place in the centre the combs containing brood just gnawing out of the cells, next to these those containing partially sealed brood, and on the outside those containing the youngest larvae and eggs. By this means we ensure that little or no honey be stored in the outer combs, where it most generally is, for about three weeks, and that queen shall, as fast as the young bees in the centre hatch out, have abundance of vacant cells to lay in. Thus the supers come in for their proper share of attention; and as the first tier ought to be ready for removal before the three weeks is at an end, we take the opportunity of re-arranging the combs about that time, proceeding as before.

I need not enter into the rationale of the whole process further than to point out that every stock of bees has a focus of heat, round which they naturally cluster and the queen deposits her eggs. The normal brood nest is thus contained within the shape of a globe, and consequently the comb in the centre has the largest card of brood and those at the sides the smallest. When we transpose the combs we disturb this arrangement, and the bees and queen instinctively do their best to restore the nest to its globular shape by filling out the cells found empty within its compass.

In conclusion I would point out the more or less remote effect that such a high pressure system has upon the queen. I have good reason for believing that a queen bee can only lay a limited, though enormous, number of eggs in her lifetime. If we cause

her to exceed so greatly the number deposited in a season it is evident that we shorten the period during which she can lay fecundated eggs. If, under ordinary conditions, she continues fertile for four years, I should say we, by such driving methods, will render her incapable of more than two, or at most three, seasons' work. And my experience agrees with such a theory. I make a point, therefore, of watching carefully over every queen that has passed her second year, superseding her when she shows signs of decreased fertility, and in no case do I keep one over three years old.—WILLIAM RAITT, *Blairgowrie*.

EXPERIENCES WITH WIRED COMB FOUNDATION.

THE immense value of comb foundation admits of no dispute. The mere straw hiveist can form no conception of the marvellous effect of wisely spreading the brood nest and inserting, as the stock is able to bear it, sheets of wax, which in twelve hours will be formed into nearly complete combs, and in forty-eight hours contain big patches of eggs. Our friend Mr. Raitt treated this operation so well in a late issue that I need say little about it, but would merely remark that I believe the right course now is to use foundation for filling the space occasioned and not spare comb. At this season foundation, if nicely made and properly used, will not stretch, and the frame may be filled with it to within half an inch of the bottom bar. When inserting it, if I find a comb of store outside the brood nest I prefer removing this, to give room for the frame which is to occupy the centre of the hive, rather than increasing the space allotted to the bees, unless indeed they are showing unmistakable signs of crowding. In this way our foundation is soon built up into combs, all of worker cells, perfect in flatness and finish, while those from time to time removed will be of immense service in the very hot part of the year, when foundation would be likely to stretch and sag.

In order that I may explain how these removed combs are to be subsequently utilised it is needful to add that I would advise increasing colonies, either by building up nuclei (an operation which I must not now be tempted to describe) or by removing to a new stand, when the bees are flying with vigour, the stock to be divided while a hive of combs takes its place. To this is given the queen of the colony, and it is well also to add a comb of brood either from the hive undergoing division or from some other; in the latter case, of course, taking care that no bees accompany it. The foragers abroad in the fields return to their old known station, and joining their queen constitute a swarm whose comb-building has been done in the parent stock; while a new queen (and of these in every well-managed apiary some are always in readiness) can be easily added to the divided stock, as young bees alone remain in it, while the disposition to swarm is in this way generally stopped, and section-building may, weather permitting, be reckoned upon. But to return. Foundation cannot be so well built up in the hottest weather, and to obviate the disposition it then has to droop and sag we have now the Van Dusen Nellis wired foundation with flat bottoms to the cells. At about each inch a thin iron wire runs, which so holds the sheet that the disposition to stretch downwards under the weight of the builders is entirely obviated; and my first experiments with this novelty led me to think that we might advise our friend Mr. Raitt, notwithstanding the beauty of the work turned out by his machine, to sell the latter at any obtainable price. The sheets given were completed, and of course without any stretching, and the eggs were in due course laid; the cells, across the bases of which the perpendicular wires ran, receiving each an egg, as in the case of the others. The grubs were fed and grew, but here and there I began to trace honey taking the place of brood, and by degrees these honey cells increasing in number showed unmistakably that they lay in the path of the wires. A careful examination revealed two grubs dead and turning blackish in cells, through the bottoms of which the wires took their way.

The injury of the wire to the grub seemed clearly indicated, and more especially since some larvae were removed after sealing had been completed. The extraction of the wire as recommended in the "American Bee Journal" was thus shown to be a necessity, and the pinners were applied as dictated by our transatlantic adviser. The tug required was so considerable as to make me tremble for the whole structure, but it bore the strain and the wire was removed; but the mischief is this, that the operation extends and distorts the comb so sadly that it is left worse in form than that built from ordinary foundation which has stretched through mismanagement. It may be that this unfortunate result is not inevitable. Experience alone can tell; but my experiment has been so disappointing that I have gone back to the ordinary foundation, which at this period of the year gives me results which leave nothing to be desired.

In addition to the destruction of the grubs in contact with the wires (which wires possibly might produce no injury if thinly coated with shellac), I have just observed two large patches of drone cells worked upon this same flat bottom foundation. Here and there irregularly formed cells too small to be used even for honey piece out the pattern, but over 3 or 4 inches in width and depth

not a single worker cell appears. I have had the opportunity of showing these to Mr. Baldwin's son, but they are open to the inspection of any interested. Unless this performance is exceedingly exceptional it points to a defect which must greatly reduce the usefulness of this form of foundation. With impressed bases I have never seen anything like this occur, and years since I succeeded in making queenless stocks build beautiful shiny worker comb from sheets made upon my plaster casts. The bees which have taken the liberty just referred to, are getting strong, and no doubt were intent upon building drone comb, but one of the objects of foundation is to give the bee-master and not the bees the power of determining the size the cell shall take. It is drawing attention to these matters, which are important to all apiculturists of the progressive school, I must not be understood to condemn flat-bottomed wired foundation, but rather to recount experiments which have certainly so far much checked my hope that a forward step had been taken.—FRANK L. CHESHIRE, *Avenue House, Acton, W.*

OUR LETTER BOX.

PIP (*Mrs. Birley*).—A dry scale on the tongue is not a disease, but a symptom of some other disease. When the bird is cured of the disease, whether roup, or diarrhoea, or gapes, the pip will disappear.

BRANNA HENS WITH DORRING COCKS (*J. W. C.*).—You have evidently been unfortunate in your selection of a cock. It is of the utmost importance to choose a vigorous bird. It is true that Dorking cocks after their first year often fail as breeders until really warm weather comes, and for this reason we prefer cockerels of nine or ten months old. As you have a chick you may have more as soon as the present cold goes.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51°32'40" N.; Long. 0°8'0" W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.				
	Baromet. at Sea Level	Hygrom- eter.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature.		Rain.
		Dry.	Wet.			Max.	Min.	In sun.	On grass.	
Sun. 25	30.168	52.1	55.3	N.W.	48.3	60.3	45.1	130.3	48.3	0.01
Mon. 26	30.202	45.4	41.9	N.W.	48.5	52.6	37.5	104.6	35.6	0.01
Tu. 27	30.188	45.2	41.9	N.	48.6	53.7	34.3	112.6	35.1	0.01
We. 28	30.079	46.5	44.6	N.W.	47.6	52.2	30.3	90.3	31.1	0.01
Th. 29	30.236	47.7	45.5	N.E.	47.6	56.7	41.5	114.3	40.3	0.01
Fri. 30	30.430	46.1	42.5	N.E.	47.3	60.6	37.9	120.9	34.9	0.01
Sat. 1	30.373	49.3	45.4	N.E.	48.3	58.4	35.5	106.6	36.6	0.01
Means.	30.165	47.9	45.0		48.1	54.5	38.7	107.2	35.9	0.01

REMARKS.

25th.—Cool but very fine, bright, sunny day.
26th.—Heavy shower at noon, but generally fine and bright; very cold wind.
27th.—Fine day, but windy and cool.
28th.—Very dull throughout the day, wind still high and cold.
29th.—Bright and fine, strong cold wind, and very dusty.
30th.—Very clear sky; bright sunshine throughout the day; cold wind.
May 1st.—Fine day, with bright sunshine and less wind.
The barometer readings were rather high, but all the thermometric values are below those of last week, the mean maximum and minimum each being 6° lower than last week and about 2° below the average. Weather mostly fine and bright, but with cold northerly wind.—G. J. SYMONS.

COVENT GARDEN MARKET.—MAY 5.

BUSINESS remains virtually the same as last week, but has a brisker tendency.

FRUIT.

	s.	d.	s.	d.		s.	d.	s.	d.
Apples.....	1	0	0	0	Nectarines	1	0	0	0
Apricots.....	1	0	0	0	Oranges	1	0	0	0
Cherries.....	1	0	0	0	Peaches	1	0	0	0
Chestnuts.....	1	0	0	0	Pears, kitchen ..	1	0	0	0
Figs.....	1	0	0	0	Pears, dessert ..	1	0	0	0
Guavas.....	1	0	0	0	Pine Apples.....	1	0	0	0
Cobs.....	1	0	0	0	Plums	1	0	0	0
Gooseberries..	1	0	0	0	Raspberries.....	1	0	0	0
Grapes, hothouse	1	0	0	0	Strawberries....	1	0	0	0
Lemons.....	1	0	0	0	Walnuts	1	0	0	0
Melons.....	1	0	0	0					

VEGETABLES.

	s.	d.	s.	d.		s.	d.	s.	d.
Artichokes.....	1	0	0	0	Mushrooms	1	0	0	0
Asparagus.....	1	0	0	0	Mustard & Cress	1	0	0	0
Beans, Kidney ..	1	0	0	0	Onions.....	1	0	0	0
Beet, Red.....	1	0	0	0	Pickling	1	0	0	0
Broccoli.....	1	0	0	0	Parley..... doz.	1	0	0	0
Brussels Sprouts	1	0	0	0	Parsnips.....	1	0	0	0
Cabbage.....	1	0	0	0	Peas	1	0	0	0
Carrots.....	1	0	0	0	Potatoes.....	1	0	0	0
Capsciums.....	1	0	0	0	Kidney.....	1	0	0	0
Cauliflowers.....	1	0	0	0	Radishes..... doz.	1	0	0	0
Celery.....	1	0	0	0	Rhubarb.....	1	0	0	0
Coleworts..... doz.	1	0	0	0	Salsify.....	1	0	0	0
Courgettes.....	1	0	0	0	Scorzonera.....	1	0	0	0
Endive.....	1	0	0	0	Seakale.....	1	0	0	0
Fennel.....	1	0	0	0	Shallots.....	1	0	0	0
Garlic.....	1	0	0	0	Spinach.....	1	0	0	0
Herbs.....	1	0	0	0	Turnips.....	1	0	0	0
Leeks.....	1	0	0	0	Vegetable Marrows	1	0	0	0

WEEKLY CALENDAR.

Day of Month	Day of Week	MAY 12—19, 1880.	Average Temperature near London.		Sun Rises.	Sun Sets.	Moon Rises.	Moon Sets.	Moon's Age.	Clock after Sun.	Day of Year.	
			Day.	Night.	h. m.	h. m.	h. m.	h. m.	Days.	m. s.		
13	TH	Royal Society at 8.30 P.M.	62.3	58.3	4 19	7 40	6 56	11 34	4	2 40	134	
14	F	Manchester Horticultural Exhibition, seven days.	62.0	60.4	4 17	7 41	7 50	morn.	5	2 40	135	
15	S		64.5	60.6	4 9	7 43	9 6	0 9	6	2 40	136	
16	SUN	WHIT SUNDAY.	65.9	62.2	4 8	7 44	10 17	0 25	7	2 49	137	
17	M	George Glenny died, 1874, æt. 81.	65.6	61.0	53.3	4 6	7 46	11 39	0 44	8	2 47	138
18	TU		66.0	62.2	64.1	4 8	7 47	0 43	1 1	9	2 45	139
19	W	Society of Arts at 8 P.M.	66.4	62.7	64.6	4 4	7 49	1 59	1 19	10	2 39	140

From observations taken near London during forty-three years, the average day temperature of the week is 64.9°; and its night temperature 41.1°.

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OVERCROPPING VINES.

SO many and disastrous failures in Grape culture ensue which can be traced to overcropping, that it may be well to direct attention to the subject while there is yet time to prevent owners experiencing further disappointment, and gardeners, young men especially, jeopardising the reputations which they have won by many years of close study and hard work. There is no crop, when it is good, over which a gardener takes more pride than Grapes, and none that raises him higher in the estimation of his employer and the members of his own fraternity; and, on the other hand, if a man fails to grow good Grapes when he has the necessary means provided him for producing them, he soon loses his standing as a gardener amongst his professional associates. It is because of the credit attaching to a successful cultivator of this esteemed fruit that so many young gardeners are impelled, by a worthy ambition to excel, to do something great in the way of producing prodigious crops. In their attempts to achieve early fame they sometimes overstep the mark, and must then struggle on for years to gain the reputation that was once within their grasp. The rock on which nine-tenths of such men split is that of overcropping. As an old cultivator having seen with regret many promising young men fail, let me urge on them to avoid this great danger, and not permit their sanguine temperaments and self-confidence to lead them into troubled waters, and possibly to shipwreck, almost at the outset of what might otherwise be an honourable career.

But there is another important aspect of the question that must be referred to. I have endeavoured to warn young gardeners whose zeal, commendable in itself, may urge them to pass the bounds of prudence in cropping the Vines under their charge, and I must now allude to the very natural influence that the owners of Vines possess over their gardeners, and point out that this influence is not always wisely exerted. I was lately in a vinery, in fact I was invited there by an able young gardener who was in great trouble. I will state the case, as there may probably be others like it; and if I can help both masters and men in such cases to a better understanding, and better crops of Grapes, I shall not have paid my visit to a Yorkshire garden in vain, nor have occupied your space profitlessly.

The Vines in the garden in question had for years been unsatisfactory; they had, indeed, been ruined by overcropping. For the first few years after they arrived at a fruit-bearing state they bore prodigious crops. The owner counted the bunches, and estimated the crop more by the number of clusters than by their size and quality. These he duly entered in a book, and each year he was determined to have a greater number to enter. The small house is one in which two hundred bunches would form an excellent crop, and three hundred averaging a pound each a dangerously heavy one; but the cropping went on until five hundred were left, which necessitated two and three being retained on each lateral that produced them. As may

be expected, this ruinous practice led to a total breakdown of the Vines, and three years ago there was not a bunch presentable for the dessert table. The then gardener, who is now farming in America, was not a skilled Grape-grower, and was too easily led on by an enthusiastic young employer to pursue a course that, although it produced sensational results at the time, could not have ended otherwise than it did. Is there not too much of sensationalism in gardening? We have sensational shows, sensational prizes, sensational pictures, sensational writers, and sensational Grape, Cabbage, and Potato growers; but how few of these prove of sterling value or achieve lasting fame! The sensational bubble first glitters, then bursts, as in the case of the Vines in question. The owner of these Vines had to be nearly without Grapes for two years—the result of his sensational crops, the old gardener had to cross the Atlantic, and the new one is experiencing pressure that is not easy to resist, for his employer is almost insisting on having a heavier crop this year than the Vines can bear without injury.

Three years ago those Vines were lifted and planted in a new border, and young canes have been trained up in place of the old rods. They have done extremely well, and this year have produced strong laterals with promising bunches on each that are now approaching the flowering stage. The owner of the Vines having had two and three bunches on each lateral is now expecting that one on each, which he considers will be a light crop, will be retained; the gardener, on the contrary, is painfully conscious that such a crop now the Vines are only just recovering will be too exhausting, and he is right, for the rods of two years' growth only are 18 feet in length, the laterals on them being less than a foot apart on both sides of each rod. Now to leave one bunch on each there would be at the least thirty-six bunches on a Vine, these bunches apparently being likely to average more than a pound each. As the owner of the Vines was, as the man said, "bent on having a bunch from every lateral," I did not hesitate to advise the removal of every alternate shoot, as the owner would then have what he was "bent on," with much better Grapes into the bargain than if all the bunches were left, while the Vines would beyond all question be in better condition for future crops. The advice is being acted upon, a few laterals being removed every morning, and as the foliage is expanding rapidly the removals are scarcely missed, and there is no bleeding. I have a firm conviction that the course adopted is the right one, although it has a roguish look about it. It almost savours of Grape stealing, but in reality instead of reducing it is increasing the profit of the Vines; instead of depriving the owner of his property it is enriching him, while at the same time it will in the end increase the gardener's reputation.

I quote the above example, as a wholesome lesson may be derived therefrom by other owners of Vines with too great expectations. If they have good gardeners they may safely trust them on the question of cropping the Vines, as nine out of ten young men will err, if they err at all, by having the crops too heavy instead of too light. It affords a lesson also to gardeners on the best mode of preventing

an unreasonably heavy crop, as in the great majority of cases removing the laterals is far better than merely cutting the superfluous bunches off and leaving the growths to be thickly crowded. But the work of disbudding should be done early. It is not too much to say that half the Vines in England would be improved by a simple thinning-out of the laterals, for an overcrowding of foliage is only a shade less injurious than an overweighing with fruit. One bunch of Grapes with fine well-coloured berries is worth two clusters of small unfinished fruit; and one stout fully developed leaf is certainly of more value than two flimsy and imperfect examples of foliage.

Now is the time to prevent both overcrowding of foliage and overcropping, and both evils may be averted by the same operation of removing the superfluous growths that at this moment are impairing the condition of hundreds of Vines in British gardens. The finest Grapes are produced by Vines with spurs from 20 to 30 inches apart, and the most profitless crops by those with the growths crowded thickly and less than a foot distant from each other, the rods also being too close together, or less than 3 feet asunder.—A NORTHERN GARDENER.

TEA ROSES.—No. 2.

THE cuttings being struck, gradually hardened off, and the situation made uncomfortable for green fly, as directed on page 309, the young plants are now ready for potting; and much as may be said against cramping them in pots when intended for outdoor culture, I think pots for the first season and shelter for the first winter are necessities which cannot well be dispensed with even in the southern parts of the kingdom. The most satisfactory results are produced when the first twelve or eighteen months of the life of a Tea Rose are one continuous growing season, and this is not difficult where there is a greenhouse to place them in during winter. But they must have light and air, and this can generally be secured by keeping them during the first winter in pots of larger diameter than the plants themselves, which will to a great extent counteract that fatal tendency of all amateur gardeners to place six plants where there is only room for one. If the first potting takes place not later than August a repotting will be necessary before winter, therefore the pots used at first need only be large enough to hold the roots, say 4 inches in diameter. A little confinement and a little shade will be an advantage for a day or two if the weather is hot and dry, and for this purpose a frame is useful. Twenty-four hours' close confinement will be quite sufficient, by which time they will have started rooting afresh, and the frame may be ventilated at night; and about the fourth or fifth evening after potting they will be the better for having the lights drawn quite off, and in future only partial shading from bright sunshine will be needed. In the event of a frame not being available, the shady side of a hedge or a wall, the interior of a cottage, or even a box with a newspaper tacked over in the place of the lid, may be made to answer in the hands of an enthusiast.

As soon as the roots have reached the sides of the small pots and before they have had time to coil round them, which in the months of July or August will take about a fortnight after potting, I recommend the plants to be shifted into pots not less than 7 inches in diameter, and if the month of August is not out a 9-inch pot will not be found too large. The soil employed should be exactly that which is suitable for Vines in pots or stone fruits—say two bushels of almost fresh turf roughly broken up into pieces as large as a hen's egg, half a bushel of thoroughly decayed and pulverised manure, and a quarter of a peck of half-inch bones. If this when mixed appear of the right texture for fruit trees—neither too light nor too heavy, it will be just what Tea Roses require; but soils in different neighbourhoods vary so much that it is impossible for anyone to prescribe for every grower, therefore each one must bring his own common sense to bear on this point. When soil is light it is easily made suitable for plants by adding a little dry pounded clay, and when too heavy the remedy is to mix burned earth with it, charcoal dust, or old mortar. Sand always impoverishes, therefore unless the soil is of a very adhesive nature it is not advisable to add sand for Roses. I dare say the size of pot I recommend will appear large to some of your readers, but those who have not given the Tea Rose this treatment and will allow me to advise them to try it, have a treat in store.

Plants struck in early summer and treated liberally will make good half-specimens by the following spring, and in the

autumn, say eighteen months from the time of inserting the cuttings, they will be large enough for most people. I repaginate a few every season, and find they produce their best flowers while they have abundance of root room and are continually throwing up shoots from the base, stronger and stronger every time, till they fill the largest pots I can plant them and become somewhat cramped. Before we arrive at this latter stage it has to be decided what further use is to be made of the plants. If planted out in a suitable place before they become too much stunted they will continue the same habit of throwing up strong shoots from the base, and some of the kinds will produce a succession of beautiful flowers through many summers and autumns. But all are not suited to outdoor culture, and happily some of these prove to be the best for forcing into flower at midwinter, and for which henceforth a somewhat different mode of treatment is necessary.—WM. TAYLOR.

HARDY WINTER AND SPRING VEGETABLES

THERE is no doubt after the severity of the past two winter gardeners and cultivators generally will be glad to ascertain what vegetables have stood well, and the reverse, through the past winter, and any information that can be given will be eagerly sought after. Mr. Muir and "YORKSHIRE GARDENER" have set good examples in this respect. But in noting failures and successes it is well to examine minutely the conditions under which vegetables are grown. In certain localities various vegetables stand the severity of the weather without injury, while in other districts the same variety fails. Of your two correspondents who have contributed on this subject, we may safely conclude that "YORKSHIRE GARDENER" has the severest weather to contend with; but will his loss in the vegetable line prove greater than Mr. Muir's? while both may have cultivated under the best conditions to produce hard and solid growth. We are more favourably situated as regards climate round Liverpool than many gardeners, as we only registered 20° of frost here, yet nearly all the autumn-own Cabbages for the spring supply have been destroyed, and those that are left are in a very backward state, while in some parts of Lincolnshire the spring cabbages a short time ago had passed safely through the winter, although 5° below zero were registered in the district. Enfield Market proved the hardest with us, which appears to be the variety grown there. How are we to account for the same variety standing well and enduring 17° more frost than those grown about this locality, where so many plants were killed?

All our Broccoliis were killed. Osborn's Winter White proved the hardiest, and stood better than late varieties, all grown under precisely the same conditions. Brussels Sprouts have stood well; they were grown on rich ground well manured previous to the crop being planted. They were planted 3 feet apart, and attained a very large size, yet plenty of light and air could play amongst them. Those that were planted thickly and the lower leaves removed in several gardens round here were killed. The Cottagers' Kale stood well, while the tall Scotch were every one killed. Savoys were uninjured and proved most useful. They were sown towards the end of April, and as soon as large enough planted from the seed bed in their permanent place. We sowed again the Dwarf Green Curled the first week in June, and planted on a sheltered border after the ground was cleared of the earliest Potatoes, and had a valuable crop, the ground having only been cleared a few days ago. The Rosette Colewort and the Hardy Green are very hardy and stood well with us. We made sowings on the 9th of June, and planted the seedlings when very small 9 inches apart. The former we continued to cut all through the frost, and long after the first Savoys were used, while the Hardy Green has proved valuable up to now. These two should be largely planted where quantities of vegetables are required; after the hearts are cut they produce a serviceable supply of sprouts.—WM. BARDNEY.

SEA SAND.—I am inclined to the belief that the remarks of "WITHYCOMBE" (page 352) are founded more on theory than practical observation. Has your correspondent proved sea sand recently and repeatedly subjected to the influence of the tides to "destroy tender plants, such as Alternantheras, Lobelias, &c.?" If so, his experience of this material has certainly been the reverse of mine. The sand of which I wrote, and successfully and almost solely employ, is nearly always subjected to the saturating influence of the tide; and so far from destroying

tender plants it appears to have a beneficial effect. I would not hesitate to use this sand for the choicest of plants, and yet "WITHYCOMBE" says it is "almost too strong for surfacing beds of Crocuses and Asparagus." Will "WITHYCOMBE" kindly state what are the destructive elements of sea sand?—A. R. COX, *Liverpool*.

ZONAL PELARGONIUMS.

FOR flowering all the year round I do not think there are any plants to surpass the Zonal Pelargoniums. Many gardeners affect to dislike them, probably because they are so common as bedding plants; but I find them very useful at all seasons, especially between October and May, a period when the flowers are of the greatest value. There is absolutely nothing to vie with the richness of the hues of many of the best varieties, and during the dull months of the year the colours come much clearer than they do under the influence of strong sunshine. With the exception of perhaps a dozen plants the whole of our stock is annually propagated from cuttings, as it is found that young vigorous plants throw up the largest trusses and continue in a floriferous condition throughout the season. I have just given the plants their first shift from the cutting pot, and it will probably be of some value to give notes of how these plants have been and will be treated.

I have tried various kinds of growths for cuttings, and find those most satisfactory which are not very strong and not too large. These callus and produce roots quickly, and continue well furnished with leaves from the soil, whereas cuttings made from very strong growths take a longer period to root and are apt to lose the lower leaves. Each cutting is inserted in a thimble pot, the smallest size made, a little moss being placed for drainage, and a mixture of equal parts of loam and sand is employed. Provided the cuttings are healthy when inserted, and a temperature of 65° to 75° is afforded them, with a dry position near the glass, not one plant in a hundred will be lost. Any time up to the end of May will be suitable for inserting the cuttings that are to flower about the end of October. Our stock is struck earlier merely because there is more space in the pit earlier in the season than there is now, and the strongest plants can be brought on to produce a few large trusses earlier in the autumn. The next step after the cuttings have been well rooted and placed in a cooler structure is to give them more root room and a better soil. The compost I employ consists of three parts light rich loam, one part cow manure rubbed down quite fine, a little rough sand, and a sprinkling of soot and bone meal. The pots for the first shift are 4 inches in diameter; a few cinders and a little rough manure are placed for drainage, and the plants are then potted rather firmly. They are placed in an average temperature of 60°, and as the soil in the pots becomes filled with roots liquid manure will be supplied to keep the plants in vigorous health. The points of the leading shoots on each plant must be taken off, and generally this will be all the pinching required, and if well managed the plants will be dwarf and sturdy. Early in July another shift into 6-inch pots, or a size larger in the case of those plants of a more robust habit, will be required. Instead of placing manure over the cinders at this time it is preferable to use either clean moss or rough turf. The same compost will be used as at the previous pottings. I have tried growing the plants in the open air throughout the summer months, but have for the last two or three years grown them under glass. I do not recommend ordinary frames, but were the sides and ends elevated, so that a greater supply of air could be secured, that style of frame would do well enough.

The flower trusses are removed as they appear throughout the summer, but I do not consider leaving a few trusses to develop at all inimical to the well-being of the plants. By the middle of October the stock must be placed in a light house where a minimum temperature of 50° to 55° can be commanded throughout the winter. A higher temperature is not necessary until after the days have begun to lengthen, when an increase of 5° or 10° will greatly assist the plants. Throughout the dull months clear water only should be given, but when fresh growth commences liquid manure may be given every time the plants require water with the very best effect on the health of the stock. It is very necessary to guard against too much heat, especially if the trusses are intended for cutting. The structure in which they are grown should be at all times more or less freely ventilated. In April the plants will succeed in an ordinary greenhouse, and may be kept growing and flowering for any length of time. The old plants are useful

for placing in vases and mixed borders. The double varieties, though they do not flower so freely during the winter months, flower early in spring under similar treatment given to the single varieties. The following are a few good double forms—Wonderful, Vesta, Madame Thibaut, Asteroid, Eugene Bandonin, Roi des Violettes, Candidissima plena, Madame Barlet, Louis Boutard, and Marie Lemoine. These are of good habit and produce their flowers freely.—R. P. BROTHERSTON.

YOUNG VINES FAILING.

A CASE of this nature came under my observation the other day. The Vines were planted three years ago in a border composed simply of turf off an old pasture, some broken bones, and charcoal. They did well the first season, but last year they had a dry stunted appearance, producing very poor foliage, in fact little better than thriving Black Currants would do. The bunches they showed just before coming in bloom turned round more like a tendril, and were as hard and dry as if dead; the buds also dropped off; the foliage meanwhile assumed an appearance of premature ripening. They made pretty good wood. The disease, or whatever it is, seemed to be in the bunches and leaves. This year they started in the usual way, but just before coming in bloom they went exactly as they did last year. They are managed by a first-rate gardener who has a reputation for the excellence of his productions, but specially Grapes. Can any of your readers throw any light on this singular case?—VISITOR.

THE POLYANTHUS MYSTERY.

I WAS well aware, as Mr. Dod surmises (page 335), that many eminent botanists have held a different opinion from my own in regard to the Primrose and Cowslip being distinct species; but as all the arguments they have brought forward, so far as I have read, have either broken down in one or more points, or seemed very much open to doubt, my opinion on the distinctiveness of these two plants remains unaltered. I have not read Mr. Bentham's "Handbook of the British Flora," therefore cannot tell what his reasons are for considering not only the Primrose, Cowslip, and Oxlip, but also the Bandfield Oxlip (*Primula elatior*, *Jaeg.*), as one species—viz., the Cowslip (*P. veris*). All I can say is that he seems to have struck on a rock that has been a stumblingblock for hundreds besides himself. I mean in regard to the word "species;" and as the question appears to me to hinge rather more on what is a species than on the fixity of the character of these plants, it would perhaps be well to clearly define what is meant by a species before we proceed to discuss the question of classification.

Of course we are all aware there is no such thing in Nature as a species—nothing but individuals; therefore the word expresses something more or less ideal, and must for this very reason be more or less arbitrary. Indeed all classifications are arbitrary, and cannot well be otherwise. We may clearly define a species and a genus, and say that the difference between them is more marked than between a race and a species, or that between a genus and a family is greater than that between a species and a genus, and carry this out until we come to the two sub-kingdoms into which all plants are divided; but who shall say where a genus ends and a species begins? Nevertheless it must not be inferred from these remarks that I attach no importance to classification, or believe that plants or animals cannot be classified. What I wish to show is that there is no such thing in any natural system of classification as an order or group of plants or animals standing alone—that is, without relationship to other groups. In the whole range of the biological vocabulary there is no word that has been more misused than that of "species;" but amongst true naturalists it has a pretty distinct meaning, which is this, that when two sets of plants vary, and this variation is greater than between individual plants of either of them, it is called "specific," while the latter variation is called a "variety." Now let us apply this to our Primroses and Cowslips, and see if they do not differ wider than can be called a variation. The first glance shows us they differ considerably in the flowers and leaves, in their mode of producing flowers, in the time of flowering (the Primrose being some weeks earlier than the Cowslip), and in the situations they inhabit. When crossed they are in a high degree sterile, and the hybrids thus produced (Oxlips) are still more so both when crossed *inter se* or with either parent. If such fixed characters as these are not sufficient to constitute a

species where shall we get a true species? With regard to the Oxlip, I have to repeat that it is a hybrid between the Primrose and the Cowslip, of which either may be the seed-bearer. The Bardfield Oxlip (*P. elatior*) is a distinct species and quite limited in its range in this country. The readiness with which it bears seed, and the fact that it is found in districts where neither the Cowslip nor Primrose occur, show that it is not a hybrid.

Having said this much on classification and in support of my previously expressed opinion, let me now return to Mr. Dod's letter. Great strides have been made in science since the days of Linnaeus, and it is somewhat unfortunate for Mr. Dod that he should have brought in Linnaeus's classification of plants, because of all that great naturalist's works his system of plant classification is the one least followed in modern science. It was not a "natural system," and therefore has been discarded. Linnaeus himself was well aware of its imperfections, and said that a natural system "was the one great desideratum of botanical science."

In discussing the origin of the Polyanthus, it is little to the point to instance seedlings of the common wild Primrose when planted in gardens showing a ready disposition to sport both in form and colour; and here let me observe that Mr. Dod has not used the word "sport" in the sense known to botanists. The variability of seedlings is well known to all, and what is more likely than that the parent Primroses were fertilised by pollen from various hybrids of garden Primroses and Polyanthuses? The Devonshire gardeners, who stated that when Cowslips are introduced into that county they soon turn to Primroses, are on a par with many in Yorkshire, who firmly believe that when Primroses are turned upside down they change to Polyanthuses, and I would as soon believe one as the other.

What Mr. Dod states about garden Primroses running into the Polyanthus habit is quite true, but then these garden Primroses are so intercrossed that no one living would venture to unravel their parentage, and it is through experimenting on Primroses grown in gardens that many mistakes have been made. A Primrose produced in a garden, though apparently pure, may have one or two crosses in it, which when again crossed would perhaps show them through the power of reversion. But I have said enough. What seems to me the most extraordinary is, that we find acres of Cowslips without any Primroses or any intermediate form, and again we find acres of Primroses without a single Cowslip or any plant connecting the two. It is therefore clear they both come true from seed, whereas if they were but varieties a union of either ought to produce Cowslips, Primroses, and Oxlips; and as they do not, I must still hold my opinion.

Mr. Dod must pardon me if I say that his remarks on fertilisation by insects are scarcely accurate. I said in my letter that pin-eyed flowers are more fertile when impregnated by pollen from thrum-eyed flowers, and *vice versa*. I should have said more on the subject, but felt I had already taken up space enough. He says the thrum-eyed flowers are all fertilised from pin-eyed flowers, and the pin-eyed from thrum-eyed. Bees of several kinds have visited my Polyanthuses daily, and I am convinced after careful observation that when a bee thrusts its proboscis down the corolla of a thrum-eyed flower the proboscis carries pollen down with it on to the stigma, and when it searches a pin-eyed one it in like manner brings up the pollen from the anthers and deposits some of it on the stigma. How can it avoid doing so?—F. BOYES.

I QUITE agree with Mr. C. W. Dod (page 335) when he says that there is not sufficient distinction between the Polyanthus, Cowslip, and Oxlip to regard them as distinct species, but merely forms of the Primrose (*Primula vulgaris*). I find the latter very often red, sometimes white, without the yellow throat. I noticed last week a wild form of *P. vulgaris* with flowers umbellate like the Polyanthus. In another shady spot I saw a Primrose with two flowers arising from one scape, and I had one sent to me with its flowers hose-in-hose; thus there is no accounting for deviations from the well-known form.

On referring to the second edition of the "British Flora," by W. J. Hooker, I find the following remarks:—"Various are the opinions respecting the above three *Primulas*. As to the permanence of the specific characters, Professor Henslow has seen them all produced from the same root, and thus in his useful little catalogue of British plants arranged according to the natural system he has reduced them to varieties of *Primula veris* as Linnaeus had done. Few plants are, however, more

constant to the characters here laid down than these are as generally seen growing in their wild state. They are rarely found intermixed, and in Scotland the two last kinds are scarcely known. Some are of opinion that the *P. elatior* is a hybrid between the other two; but Mr. H. F. Talbot found upon the summit of a high mountain near the Lake of Thun in Switzerland *P. elatior* in abundance, while *P. veris* was confined to the base of the hill, and *P. vulgaris* was not found within fifty miles of it." As will be seen by this, the author is inclined for them to be species rather than forms, but I am inclined to think with Mr. Dod and Professor Henslow, and that is to consider them as forms only of *Primula vulgaris*.

I append a botanical description of each—viz., *Primula vulgaris* (Primrose).—Leaves toothed, wrinkled; scape single-flowered; limb of corolla flat; syn. *P. veris*, var. *acaulis*, L., Henslow. *Primula elatior* (Oxlip).—Leaves toothed, wrinkled, contracted below the middle; scape umbellate; limb of corolla flat; syn. *Primula veris*, var. *elatior*, L., Henslow. *Primula veris* (Cowslip).—Leaves toothed, wrinkled, contracted below the middle; scape umbellate; calycine teeth obtuse; limb of corolla concave; syn. *P. veris* var. *officinalis*, Henslow.—W. ROBERTS, Penzance.

P.S.—Is the *Primula elatior* of Withering—(See "British Flora," by W. J. Hooker, 2nd ed.), and that of Jacquin (see London's "Hortus Britannicus," and London's "Catalogue of British Plants") the same? Probably Col. Trevor Clarke could answer my question?—W. R.

I AM at a loss to find in what respect "AN AMATEUR'S" opinion differs from mine. I fully agree with every word of his letter on page 351, and our experience seems to be just the same. For many years my habit has been to raise Polyanthuses from bought seed, and to keep them in the seed beds till they flower. I then select the best for spring bedding, and transplant the rest to the shrubberies, where they are allowed to shed their seed and are left to themselves for two or three years, when a complete clearance is made. I enclose a bunch of flowers, none of them removed more than two generations from an ordinary garden Polyanthus, showing the different steps by which they descend to the pure and simple wild Cowslip and wild Primrose, both of which are frequently found amongst them. Wild Primroses have sometimes been planted in these borders, but never wild Cowslips. Now if garden Polyanthuses when left to themselves degenerate in one or two generations into wild Primroses and wild Cowslips, is it not a fair inference that they are improved Primroses and Cowslips? But it probably requires a patient cultivation for many generations to produce a good Polyanthus, though the reversion to the natural type is rapid enough.

To Col. Trevor Clarke I say that I have no pretension at all to be scientific, and that I have not the patient perseverance required for making scientific experiments in plant culture, but I respect those who have it all the more. My observations are quite casual and my conclusions often drawn at random, and I am thankful when they meet with the criticism of those who know more of the subject than I do. But what I write records of what I have observed, or believe I have observed: I am always glad to be taught if I am wrong. There is one question the answer to which will interest many of your readers, and perhaps Col. Trevor Clarke will give us his opinion about it. If the flower generally called the Oxlip is not a cross between the Cowslip and the Primrose, how is it that it is never found wild except where both Cowslips and Primroses grow together? It has often been stated that the late Professor Henslow produced Cowslips, Oxlips, and Primroses from the same root.—C. WOLLEY DOD.

[The flowers represent a strange intermixture of forms. There are two or three Polyanthuses, but it is impossible to describe the others by any other term than mongrels. They are neither true Cowslips, Oxlips, nor Polyanthuses, but the three types appear merged into various sizes, forms, and colours.—EDS.]

HAVING noticed with interest the recent discussion upon the origin of the Polyanthus, I desire to mention a rather curious sport of the *Primula vulgaris* which has occurred in my garden. The plant in question has borne flowers of the ordinary type all spring, but has now produced a truss of three flowers upon a footstalk similar to that of the Polyanthus, one of the flowers being perfectly double, and the remaining two single. The other flowers upon the plant are all of the common type

There are several roots of the *Polyanthus* in close proximity to it, but no varieties of the double *Primrose*.—M. H.

THE LATE ROBERT FORTUNE.

ALL lovers of beautiful flowers and fine trees must feel grateful to the Editors of the *Journal of Horticulture* for so kindly furnishing its readers with an excellent portrait and sketch of the career of one who has done so much to enrich the gardens and landscapes of this and other European countries.

Everything connected with this very successful traveller and collector must now when he is gone be interesting to the plant-loving portion of the public; and the writer of this, happening to be a native of the same parish, has known Mr. Fortune from his earliest boyhood, and has thought that it might possibly be interesting to some of the numerous readers of the *Journal* to know that he received his first instructions in gardening from a Mr. Wm. Falla, who was long gardener to Mr. Buchan at Kelloe. Mr. Falla was considered an excellent gardener, and was in all other respects a most estimable and worthy man.

Mr. Fortune left Kelloe for Moredun when still a very young man, and when he had been about twelve months at the latter place, the writer being then in Edinburgh, well recollects walking to Moredun, two miles distant, on the evening of a winter's day, passing the night there with Mr. Fortune, and starting along with him very early on the following morning, when we crossed the range of Soutra Hills, and walked to our native parish of Edrom, which we reached about night-fall, the distance travelled being fifty or more miles. There were no railways in connection with Edinburgh in those days, and I think the only conveyance available to us was the Dunse two-horse coach, stage waggon, or carrier's cart; the former I daresay somewhat expensive, and the latter rather slow. But our hearts were light, and our purses very likely partook of the same buoyant quality, and we then thought it but a light task to perform the journey on foot, little then aware of the many longer ones which one of us at least was destined in after years to undertake.—P. GRIEVE.

PACKING CUT FLOWERS IN SPINACH.

ALTHOUGH we are within comparatively easy distance of London hamper or boxes of fruit, flowers, or vegetables started from here at 7 A.M. seldom arrive at the town house of my employer before 6 P.M. This is owing to our being on the eastern side, and with a railway terminus several miles from the west end of London; it will therefore be seen that we are worse situated than are others who may be a hundred miles and upwards from the metropolis, but are able to send to a terminus much nearer the abode of their employers. In my case the packages are travelling about London in the vans of the *Parcels' Delivery Company* several hours during the hottest part of the day, to the injury of the contents unless well packed. Vegetables are commonly packed in Spinach, and having frequently observed how fresh they turn out when so packed I last season decided to try its effect on cut flowers, and so well did it answer that I was requested to continue its use. *Stephanotis* and *Roses* are flowers much in request here. The former and similarly delicate flowers I was accustomed to pack carefully in cotton wool, and the latter closely in thin layers in common with other flowers. In neither instance did they arrive at their destination in good condition, invariably flagging badly, and almost irrecoverably. The cotton wool, although it prevents bruising, really absorbs moisture from the flowers; but not so the succulent *Spinach* leaves, as the flowers are taken out of the packages apparently as fresh as when gathered. A leaf is wrapped round each *Rose*, and also each bunch of *Stephanotis*, a smaller leaf being placed among the pipe; and the other flowers are mostly laid on *Spinach*, and the rows divided by it. Shallow boxes are used for packing, and I find it is a good plan to cut the flowers and place them in pans of water on the previous night, as they then absorb sufficient moisture to compensate for the loss by bleeding. To keep up a supply of *Spinach* during hot weather frequent small sowings are made on a north and rather rich border.—W. IGGULDEN.

PYRUS JAPONICA.—This is often seen tacked to a wall, and in such a position its bright scarlet flowers have a very cheery appearance during the cold weather, but why is it not more frequently planted to grow as a bush? We have three large

bushes of it, the smallest of which is 15 feet across, 8 feet high, and almost a perfect half globe in a blaze of scarlet. The other two are equally good, very symmetrical, and if not quite as bright as the *Rhododendrons*, they last much longer in flower, grow a better shape, and 12° or 15° frost injure neither flowers nor shoots. They stand separately on the grass, and have not been trimmed in any way for the past eight years. Bullfinches when numerous will take their buds, but bullfinches should not be numerous; the remedy is powder and shot.—WM. TAYLOR.

ROYAL HORTICULTURAL SOCIETY.

MAY 11TH.

THIS Meeting was not distinguished by any extraordinary display either of plants or fruit, yet the latter comprised some excellent *Pine Apples* and *Strawberries*, while the former were sufficiently numerous to make one side of the conservatory bright, and several new plants of unusual interest were exhibited. In the conservatory Messrs. Veitch & Sons' group of *Azaleas* and *Maples* occupied a large space, and the rich colours of some of the *Azaleas* were so agreeably softened by the pleasing light green foliage of the *Maples* that the effect was extremely satisfactory.

FRUIT COMMITTEE.—Henry Webb, Esq., in the chair. A dish of very fine *Strawberries* was received from Lord Wimborne, Canford Manor, Dorset. They were the President variety, and were from plants which Mr. Hinds, the gardener, stated were wintered without any glass protection and potted the second week in August. Mr. Hinds also sent a dish of William I. Pea grown in 9-inch pots in a cool orchard house, also two dishes of excellent *Mushrooms* grown from a bed in the open in the ridge form and covered with 9 inches of litter. There was also a fine dish of Veitch's Improved *Ashleaf Potatoes*. All these objects showed superior cultivation, and were awarded a cultural commendation. Mr. Hudson, gardener to H. J. Atkinson, Esq., Gunnersbury House, Acton, sent seven *Queen Pines* of excellent flavour which were grown in small pots in a very limited space. They were considered well worthy of a cultural commendation, which was awarded to them. Mr. John Beach Preston, Igham, Sevenoaks, sent a dish of seedling *Tomatoes*, which were identified as the same as Hathaway's *Excelsior*. A letter of thanks was awarded. Mr. Samuel Ledsham of Green Lane, Boughton, Chester, sent several heads of a late *Broccoli*, which was greatly admired, and it was suggested that it should be sent again to the next Meeting, when some other varieties will be exhibited along with it for comparison. Mr. Maher, gardener to C. Alhhusen, Esq., Stoke Court, Slough, sent dishes of Hunt's Tawny *Nectarine* and Crawford's Early *Peach*, also a dish of President *Strawberry*. They were considered very good, and received a cultural commendation. Mr. Miller, gardener, Clumber, Notts, sent fruit of *Passe Colmar*, *Ne Plus Meuris*, and *Winter Nellis Pears*, and *Vicomtesse Hericart de Thury Strawberry*, to which a letter of thanks was awarded. A very interesting collection of European fruits grown in South Australia was exhibited by Mr. George Shelton of Commercial Street, Mount Gambier. It consisted of a dish of *Apples*, *Uvedale's St. Germain Pears*, *Sultana* or *Jordan Almond*, yellow *Danvers Onion*, and two varieties of *Potatoes*. A special letter of thanks was awarded.

FLORAL COMMITTEE.—Dr. Denny in the chair. The plants submitted to the Committee were in excellent condition, although few in numbers. Messrs. J. Veitch & Sons, Chelsea, exhibited several new plants, and for the following three first-class certificates were granted—*Anthurium Schotterianum* *Rothschildianum*, a form that has resulted from crossing the ordinary *A. Schotterianum* with the white variety, was raised by Mr. F. Bergman, gardener to Baron Rothschild at Ferrières, France. The leaves resemble the typical species, but the spathe exhibits a combination of the characters of both, for it is white spotted or dusted over with red, and the spadix is yellow. It is certainly very peculiar, but will not surpass the old form in a decorative point of view. *Chionographis japonica*, a pretty little plant with a basal rosette of leaves and long scapes of small white flowers. *Gloxinia Prince of Wales*, a variety of great merit; habit compact and sturdy; flowers erect, very symmetrical in form; colour white, thickly dotted with violet purple. Several other *Gloxinias* were shown by the same firm, notably *Eclatant*, of a rich crimson colour; and *Ariadne*, similar in form to *Prince of Wales*, but dotted with red. A plant of a dwarf *Anthurium* was also sent, named *A. Schotterianum pygmaeum*, about 9 or 10 inches in height, with narrow acute leaves, and narrow brightly coloured spathe. Mr. G. Braid, Winchmore Hill, sent plants of seedling *Pelargoniums* of the type known as "decorative varieties"—namely, those grown for market. They were all in 48-size pots and in vigorous health; but of the three varieties shown only one—viz., *Decorator*, was considered sufficiently distinct to merit a first-class certificate. This was of good habit; the trusses large; flowers of good form, petals slightly crimped round the margin, white streaked with rose in the centre. The others, *Criterion* and *Distinction*, were also good varieties and profusely flowered. Mr. Weatherall of Finchley also exhibited some new *Pelargoniums* of the same type. First-class certificates

were awarded for the following—Sunrise, habit compact; truss large; flowers rich scarlet, with a dark blotch on the upper petals: very showy. Clipper, trusses neat; flowers rosy crimson, the upper petals being rather brighter, marked with a dark blotch: and Mr. Gladstone, a fine variety, with rosy salmon flowers produced in noble trusses. A first-class certificate was awarded for a new Gloxinia from the Society's garden at Chiswick, which was appropriately named the Chiswick White. The plant was in excellent condition in a 24-size pot, and was bearing over two dozen fine flowers and buds. The former were of unusually good form, large and pure white. This appears to be one of the best white varieties yet obtained both in purity of colour and profuseness.

Among the miscellaneous exhibits was a remarkably fine specimen of *Odontoglossum odoratum* from Mr. W. Sherwin, gardener to M. Sparks, Esq., Charlwood House, Liverpool, and for which a cultural commendation was deservedly awarded. It was bearing over two hundred flowers. Mr. H. Cannell, Swanley, Kent, exhibited cut flowers of the pretty double white *Campanula persicifolia*, a very useful plant for supplying pure white neatly formed flowers; also specimens of *Pelargonium cucullatum flore-pleno*, somewhat in the style of the well known Rollison's Unique; some excellent seedling *Mimulus*, and a number of new *Primulas* of the *lilacina* type. A vote of thanks was accorded to Mr. Cannell for his collections, and to Mr. R. Dean, Ranelagh Road, Baling, for collections of hardy flowers, including Wallflowers, very fine; *Primulas*, *Polyanthuses*, and the brightly coloured *Aubrietia violacea*. Messrs. Chas. Lee & Son, Hammersmith, sent plants of a new *Lobelia* named Blue Star, very bright in colour, with a white eye; small *Retinosporas*, and specimens of the Golden Box. Mr. R. Bayman, gardener to the Hon. Leveson Gower, Holmbury, Docking, sent flowers of a seedling *Primula japonica* that were nearly white, being only faintly tinged with purple in the centre.

In the conservatory Messrs. Veitch staged a handsome group of *Azaleas* and Japanese Maples, the former including a large number of exceptionally good varieties. Some of the most noteworthy were the following:—Oswald de Kerchove, flowering most profusely, colour a pale crimson; *Triomphe de Wondelghem*, a fine double salmon scarlet; *Roi d'Hollande*, very bright red, good flower; *Flambeau*, small flower, but of an intensely rich crimson colour; *Comtesse de Flandre*, *La Rosea*, and *Belle de Roses* are excellent pink varieties with large flowers, white; *Mlle. Marie Lefebvre* and *Rosa Bonheur* are fine white forms. About seventy pyramidal specimens were exhibited, all very well flowered. A gold medal was awarded for the group. Messrs. Wm. Paul & Son, Waltham Cross, were awarded a silver Flora medal for six boxes of excellent cut *Roses*, comprising about 180 blooms, all very fresh and bright. *Baronne de Rothschild* and *Duchess of Bedford* were admirably represented. Mr. H. Cannell was adjudged a silver Bankian medal for baskets of *Pansies*, including *Chieftain*, *Vestal*, *Maggie*, *Yellow Boy*, and *Queen Victoria*, varieties of great beauty and shown in fine condition. A silver Bankian medal was also awarded to Messrs. Osborn & Sons, Fulham, for a group of stove and greenhouse plants, pens of the intensely deep blue *Gentiana acanthis* in the front row being especially noticeable. A similar medal was accorded to Mr. Rapley, gardener to J. Brand, Esq., Bedford Hill House, Balham, for a group of *Calceolarias*, well grown, with large flowers, some being very finely coloured. Messrs. Smith & Lark, Florists, Kensington, sent bouquets and ornamental baskets of *Ferns*; and a large group of plants was sent from the Society's garden at Chiswick, comprising some excellent *Gloxinias*, a collection of species of *Pelargoniums*, and young plants of *Abutilon Sellowianum marmoratum* in a highly creditable condition as regards vigour and colour.

ORIGIN OF PYRETHRUM GOLDEN FEATHER.

So many erroneous statements have been made as to the origin of this plant, I am wishful that the honour of its origin should be given to the one to whom it is due. The originator of it was a Godmanchester man, Ebenezer Seward, who was once my gardener, a man of considerable intelligence. He found the plant in his cottage garden and brought it to me, and at my suggestion sent it to Messrs. Henderson & Sons. He named the plant himself "Golden Feather," and disposed of his stock to Messrs. Henderson. He is still living as gardener to P. E. Tillard, Esq., of Godmanchester, near Huntingdon. I saw him last month, and had the pleasure of telling him that I had seen his Golden Feather in common use in France and Italy.—GEORGE PINDER, formerly Vicar of Hartford, near Huntingdon.

I WAS much surprised on reading the account given in the *Journal of Horticulture* for April 29th respecting the origin of Golden Feather Pyrethrum. Messrs. Henderson must have forgotten of whom they bought it. There are several gentlemen and their gardeners, also Messrs. Wood & Ingram of the

Huntingdon Nurseries, who can bear testimony to the fact that I was the raiser of it, and also gave it the name of "Golden Feather."

About 1864 a seedling *Pyrethrum* with yellow leaves appeared in a flower pot, in which was growing a scarlet *Pelargonium* at my small nursery at Godmanchester near Huntingdon. I preserved it carefully, and the following spring I had four plants of it, thirteen of which I had raised from cuttings. I then took a plant to the Huntingdon Nurseries to ask the late Mr. Ingram what he thought of it. He happened to be home at the time, but his foreman, a man of usually very good judgment, utterly condemned it, and advised me to throw it away. Up to that time I had hoped to realise a good sum of money for it, as I believed it would make an excellent plant for bedding purposes, but I was somewhat disheartened by his opinion. At length I sent a leaf or two to Messrs. Henderson of St. John's Wood, London, and I asked them whether they thought it would not make a useful bedder. They replied, as they had not seen the plant they could not say much about it, but from the leaves they thought perhaps it might prove useful, but that they were afraid it would revert to the green colour of the old kind, yet they stated their willingness to purchase the stock. Remembering the condemnation it had received I was afraid to ask much, so I informed them I had fourteen plants, that they should have them for £2, and that I would take it out in goods—viz., Bicolor and Tricolor *Pelargoniums* of rather new varieties. I also stipulated that they should send me free of charge one of the first of the plants of the Golden Feather that they offered for sale. Hence the stock passed into the hands of the firm named, and in due time they sent me instead of one two plants of my Golden Pyrethrum. I was formerly gardener to the Rev. Mr. Pinder, but I left his service in the year 1860. I then opened a nursery, where I have ever since carried on a small florist's trade, and where the Golden Feather had its birth. I take the management of the gardens of P. E. Tillard, Esq., as I also do some others, but I am not a regular gardener to anyone.—EBENEZER SEWARD, Godmanchester, Huntingdon.

[These letters appear conclusive on the point, and we are glad to afford Mr. Seward the credit of having raised one of the most popular and widely cultivated decorative plants of modern times.—EDS.]

NOTES AND GLEANINGS.

AT a general meeting of the ROYAL HORTICULTURAL SOCIETY held on Tuesday last, Colonel Trevor Clarke in the chair, the following candidates were duly elected Fellows—viz., Miss Attye, Isaac Beeman, G. S. Benham, Mrs. F. Birt, E. Blythe, Mrs. Bullar, Wakefield Christy, Mrs. Compton, C. C. Cotton, Mrs. Davenport, James H. Deakin, Walter Derham, B.A., F.G.S., Miss Lena Fawkes, E. Gilbert, Patrick Grant, Mrs. Philip Gordon, Mrs. Fyfe Jamieson, J. M. Leby, Miss McDowall, Miss S. A. McDowall, Capt. E. Spencer Mann, Charles Parbury, G. R. Peerless, Mrs. Shaw, Hon. Mrs. Jervise Smith, Lord Sudeley, Richard A. Todd, J. Walker, Mrs. Henry Yeames.

WE remind our readers that the Steward of the horticultural department of the BATH AND WEST OF ENGLAND SOCIETY'S SHOW, which opens at Worcester on June 2nd, intends giving three, if not four, silver cups for groups and specimen Orchids—namely, one value £10 10s. and two value £5 5s., or money if preferred. Intending exhibitors are requested to forward to the Steward as soon as possible a description of the plants proposed to be shown, and the name of the gardener who will be in charge. For plants other than those above referred to money prizes will be given as gratuities to gardeners according to the value of the collection staged. Plants must be in their places by June 1st. All required information relative to this section of the Show can be had from the Steward, the Hon. and Rev. J. T. Boscawen, Lameran, Probus, Cornwall.

AT a meeting of Council of the Royal Horticultural Society held on Tuesday last DR. M. T. MASTERS, F.R.S., was appointed Honorary Foreign Correspondent. We congratulate the Society on this very satisfactory appointment.

WE have received from Mr. Samuel Ledham, Market Gardener, Boughton, Chester, some heads of LATE BROCCOLIS of considerable merit. The heads are extremely solid, and almost as white as early Cauliflowers. They are not large, but quite large enough for a gentleman's table, being 4 inches across

and the same in depth, and they are, we think, the heaviest for their size we have noticed. Their whiteness is due to the marked self-protecting character of the variety, the heads being deep down in the plant and closely enveloped with leaves, these not having the twisted form of the Knight's Protecting type. Without actual comparison we are not able to say that this Broccoli is distinct from all others; we can only say it is a very good one, and if of dwarf habit and hardy it will prove highly worthy of cultivation, especially if, as we are informed, "it will continue producing heads for three or four weeks longer."

SINCE the issue of the first part of LETTS' POPULAR ATLAS sufficient time has elapsed for the merits of the work to be recognised. After examining the three fine maps that this part contains we should have been surprised had it not met with general approval. The work has received strong and wide praise, but not more than it deserves. Clear, tasteful, artistic, comprehensive, and cheap, it ought to have a wide circulation, and in its complete state will form a splendid atlas that will be cherished by those who possess it as containing a great mass of accurate geographical information presented in a singularly perspicuous and pleasing manner.

A CORRESPONDENT informs us that the FRUIT PROSPECTS in the south of Scotland, now that the flowers are opened and are opening, are not very bright. There was an abundant show of blossom on most kinds of fruit trees, but it proves to be of the poorest quality, and but little of it is setting. Early Apples will be a crop, but not the late sorts. All small fruit, however, will be most abundant.

IN one of the houses at the Royal Botanic Society's Gardens, Regent's Park, the remarkably distinct GARDENIA STANLEYANA is now bearing a number of its long trumpet-shaped flowers, which are in general appearance extremely unlike the ordinary forms of Gardenias. The corolla tube is about 9 inches in length, of a very dark purplish colour—almost black; the lobes and the inner portion of the flower are spotted and stained with a dull reddish purple on a white ground. The peculiar colouring and the great length of the flowers render the plant very striking and not unattractive. It is by no means difficult of culture, but some growers cannot succeed in inducing it to flower, possibly from the growth not being well matured.

IN the house devoted to useful plants at the same Gardens, CINNAMOMUM CASIA, the species which yields the Cassia bark of commerce, is now very beautiful. The plant is growing freely, and the young leaves are of a bright red colour that at a short distance would render them easily mistaken for flowers. The contrast with the dark shining green of the older leaves is very great, and in few other plants can such a strong development of colour be observed in the young foliage. In the same house the variety of Vine which produces the Currants of commerce, *Vitis vinifera corinthiaca*, is flowering; and a fine specimen Mango, *Mangifera indica*, is growing very freely.

MESSES. KELWAY & SONS have now in full flower two thousand plants of CALCEOLARIAS in one of their houses at their nurseries, Langport, Somerset, and if the majority of the varieties are equal to those which have been sent to us the display must be well worthy of inspection. The flowers before us combine size, form, and smoothness with richness of colours and clearness of spotting.

A CORRESPONDENT sends us blooms of a PERPETUAL-FLOWERING EVERGREEN ROSE from Bodruth, which he says is always in bud or bloom winter or summer, frost or snow. It has been in the present garden forty years, and was in a garden previously over sixty years, therefore the plant must be over one hundred years old. There is now perhaps three hundred buds of bloom upon it. It is not larger than a large Currant bush. It is a China Rose, somewhat resembling the old Monthly; but is deeper in colour, and, has smaller leaves. Mr. William Paul thinks it one of the numerous varieties of China Roses which were introduced from about Milan, Italy, early in this century, and it resembles a variety named Belle de Manse, which he knew many years ago.

WE regret having to record the death of Mr. G. MORLEY, head gardener at Warnham Court, the seat of C. T. Lucas, Esq. The deceased had been gardener on the estate for several years, and died after a few days' illness only, on the 7th inst. He was about thirty-five years of age, and within a few days of his demise bore the appearance of being a strong, healthy,

and robust man. Mr. Morley was of great assistance to the Horsham Horticultural Society, and particularly at their annual exhibitions, at which he was always one of the chief contributors.

WRITING ON THE PLANTS AND SHRUBS FLOWERING AT DUBLIN a correspondent writes—"Veronica Hulseana is now very floriferous in the open air. It has withstood the severity of the past two winters, trained on the low front wall of a greenhouse. Narcissus Bulbocodium is a mass of golden trumpets, and the large new variety N. Bulbocodium citrinus is only just past its beauty. One of the prettiest of all wall shrubs now is the pale blue Ceanothus divaricatus. Solanum crispum is covered with wreaths of its purplish blue Potato-like flowers, and the pink buds of the Judas Tree (*Cercis siliquastrum*) are plentiful. Rain is now wanted here to moisten the ground and soften the harsh winds."

OUR correspondent "W. J. M., Clonmel," writes as follows on PROTECTING TENDER ANNUALS:—"I have been putting out French and African Marigolds, various *Asters*, *Dianthus Hedewigii*, *Phlox Drummondii*, and such-like tender annuals (I have a strong dislike to their becoming drawn and spindly under glass) during the past week. When I commenced the weather was moist and tempting for such work, but at once a crisp drying north-east breeze set in, and I foresaw my work would soon be lost. I looked around for a quick remedy, and found convenient some short mown grass. This I thinly strewed over my tender annuals, so as not wholly to exclude air, and found it effective against harsh east wind and hot sunshine. Not a plant has been lost. As this protector is within the reach of all it may be useful to mention it."

WE have received from Messrs. James Carter & Co., High Holborn, flowers of their new PRIMROSE CLOTH OF GOLD, which is apparently a double form of the common Primrose. It is an exceptionally fine variety, and one that is likely to prove of great value for flower borders and for cutting purposes, the flowers being very full of petals and of excellent form. The colour is a clear primrose yellow.

AT Oakwood Hall, Wylam-on-Tyne, the seat of Norman Cookson, Esq., is a choice and unique collection of ORCHIDS, embracing nearly all the genera. There is in bloom a very good example of *Cypripedium caudatum* roseum, the antennae-like petals being over 30 inches long, and the labellum richly marked with rose. There are over twenty-six forms of this genus, and embrace such as *O. Laurenceanum*, *O. Selligerum*, *O. vexillarium*, *O. niveum*, &c. *Vanda snavis* is in bloom, the spike having ten fine flowers. *Angreecum*, *Phallopseids*, *Aërides*, and *Saccolabium* are all well represented in the East Indian house. In the Mexican house *Odontoglossum Alexandræ* is very good, the flower being richly marked with crimson on the lips. *O. cirrhosum*, *O. Roeblii*, and several others of this genus are in excellent health. The condition of the plants reflect much credit on Mr. Alexander, the gardener.

MARÉCHAL NIEL ROSE.—In your notes of last week a Maréchal Niel Rose is mentioned as having produced this season seven hundred blooms. We have one in our large orchard house which I think will compare favourably with it, as it has for some years produced upwards of two thousand blooms each year.—CHARLES E. PEARSON, *Chilwell, Notts.*

LILIES.

ANY remarks upon Lilies are of interest to a large portion of the garden fraternity, and I wish to draw attention to some of the best and more generally known species and varieties, to induce, if possible, a still more kindly feeling for Liliums than even at present exists, and the hints upon cultivation will be noticed in connection with each kind mentioned. There are about six primary points to be considered in the cultivation of most Lilies (for there are some which need but little attention)—viz., 1, perfect drainage; 2, a good depth of suitable soil; 3, non-injury to the perennial roots at the base of the bulbs, in the case of imported bulbs this is out of the question; 4, sufficient water when growing; 5, feeding well the canline roots; 6, providing a sheltered or semi-sheltered situation in cases where they are cultivated outside, not only from cold and cutting winds, but from early frosts, by covering with litter, as well as ensuring them at least a slight shading during the hottest part of the day. Other details in their culture must necessarily be studied, but they will be referred to under the

different species and varieties, of which the following are some of the most showy and easily grown :—

L. auratum.—This species is well known, and is admired by all who have seen it in good condition. It is difficult to describe it, since there is such an enormous amount of variation naturally, and differences resulting from different modes of cultivation. I have seen flowers nearly white with a few orange or crimson spots, or freely spotted with orange or crimson central bands down the perianth divisions. The flowers are usually spotted and banded, and their beauty depends much upon the number of markings. The size of the flowers and height of plants depend on the method of culture. When growing this in pots, if we are treating imported bulbs, it is best to pot them in small pots, say 48-size, with soil composed of good fibrous loam and leaf soil in equal parts; or peat may be employed instead of leaf soil, with a very copious admixture of sharp sand, well draining the pots. Place them outside plunged in ashes or cocoa-nut fibre; and if there is a prevalence of wet place a light over them, as too much wet in this stage is very injurious. When well rooted and growing shift the plants into 8 or 10-inch pots, using good loam, leaf soil, decayed cow manure, and sharp sand well mixed, placing some turfy pieces round the young stems to encourage the cauline roots. Do not fill the pots, as a good top-dressing of loam and cow manure will prove beneficial. Supply water abundantly when the plants are growing, and when the pots are well filled with roots liquid manure may be given occasionally. Outside they require a good depth of soil, good drainage, planting them about 6 inches deep, or even 8 inches. This species does well planted in Rhododendron beds, where we have known it to flourish marvellously. In the case of established bulbs it is most injurious in shifting or repotting to bruise or remove the large fleshy roots at the base of the stem. It is unnecessary if the bulbs are planted outside in well-prepared soil to disturb them, as they will improve year after year. Flowers from July to September; native of Japan.

L. bulbiferum.—This is a very fine species, indigenous to the south of Europe. It grows usually from 2 to 3 feet high, the stems being thickly clothed with lanceolate leaves bearing buds in their axils, which are young Lilies in an infant state. The stems bear several flowers at the top, erect, bell-shaped, deep crimson at the base shading to orange, spotted. The variety *umbellatum* is rather stronger in growth, with crimson scarlet

flowers freely spotted. They are both excellent plants in outdoor gardens, as they will flourish in almost any soil, and are not so particular as to situation. Prepared soil improves them, but it is not a necessity.

L. Browni.—This Lily is really only a variety of *L. japonicum*, although sometimes regarded as a species. It grows from 2 to 3 feet high, producing very large trumpet-shaped flowers 8 or 10 inches long, ivory white inside, while the outside is brown, giving it at once a distinctive character. It succeeds well in pots or planted outside, giving it a good position with soil recommended. It does remarkably well planted on a mound of good soil in a sheltered position.

L. candidum (q. 53).—Known almost from time immemorial as the Old White Lily, and it is still one of the best in purity and sweetness. Plant it alternately with standard Roses; may, plant it everywhere. Owing to its cheapness it is within the reach of everybody, and it will grow in almost any soil or situation. The double form is very pretty, lasting a considerable time in flower, but it requires bright and warm summers to bring it to perfection. The variety known as *speciosum* is more slender in growth, and the flowers are even more delicate. This old favourite when grown in large clumps is very beautiful, as may be seen by the annexed engraving.

L. canadense.—This species is one of the peat-loving section, and will not thrive without it. The stems attain a height of 5 or 6 feet, bearing from 6 to 12 rather bell-shaped flowers, which vary considerably in colour. The flowers of the species vary in colour from soft yellow to deep crimson, and in purchasing it is best to get them mixed, all freely spotted with black. It is one of the best and most

stately Lilies in cultivation, and certainly one of the best for Rhododendron and Azalea beds. Native of the United States, where it grows like *L. superbum* and *L. pardalinum* in moist peaty places, frequently in bogs; and they flourish best when planted in boggy beds of peat and sand.

L. carnolicum.—A very beautiful species, growing about 3 feet high, producing several flowers of a bright orange-scarlet colour, deepest at the base, freely spotted with black, with the perianth divisions sharply reflexed, forming a very handsome object. Soil—loam, peat, and sand, with perfect drainage. Native of Carniola.

L. chalcedonicum.—This elegant species is a native of the Levant. It grows from 3 to 4 feet high, producing from six to ten flowers with the segments rolled back of a fiery scarlet



Fig. 53.—A CLUMP OF WHITE LILIES.

colour. It is easily grown, and is very striking owing to the intensity of colouring. It flowers in July.

L. cordifolium.—This Lily may certainly be designated hardy. It is best, however, grown as a greenhouse plant. The stems grow 3 or 4 feet high, with large cordate leaves, carrying at the top about four large funnel-shaped flowers, which are

waxy white tinged with green outside. It is a lovely species and well worth growing. The form known as *L. giganteum* is indigenous to the Himalayas, and is quite a greenhouse plant. It grows from 8 to 12 feet high, bearing twice as many flowers as the type; they are white, with purple stripes outside, deliciously fragrant. This is a noble Lily for the decoration of



Fig. 64.—IRIS TECTORUM.

the conservatory, flourishing well in loam, leaf mould, and sand.

L. ororum.—This is one of the most common Lilies of our gardens, but is very showy and inexpensive. The stems grow about 3 feet high, producing large umbels of erect bell-shaped flowers of a light orange colour freely spotted with black. The variety known as *splendens* is very handsome, being of a clear yellow colour and copiously spotted. These may be grown

in almost all soil, and as border plants are invaluable. They are indigenous to the south of Europe. Flowers in July.—T.

IRISES.—No. 8.

FOLLOWING, and nearly allied in structure to the Irises last described, are the two species *I. falcifolia* and *I. filifolia*, which constitute the section Hexapogon, the distinguishing mark being

the extension of the beard down the claws of the standards and falls. Both these forms are found in the region of the Caspian Sea, where they chiefly inhabit deserts or barren land; but although possessing a share of the beauty which characterises the genus, they have at present not been introduced except as specimens for herbaria. It is somewhat curious, too, that this division is the only one unrepresented in English gardens. Next in order to the small Hexapogon group is the larger and correspondingly interesting section denominated *Evaasia*, which includes seven species, several already well known in gardens, and all more or less attractive. The principal mark of this group is the petaloid crest on the claws of the falls, both the latter and the standards being destitute of a beard.

One of the longest introduced species of this section is *I. cristata*, a pretty dwarf form with pale lilac flowers, that are remarkable for their long tubes. It is a native of Carolina and Kentucky, whence plants were brought to England about 1756, and now, although by no means common, it is occasionally seen in gardens, flowering during the present month or a little later. *I. japonica* is another attractive species that was introduced in the last decade of the eighteenth century from China, where and in Japan it abounds in woods or in similar shady damp situations. This indicates the cultural requirements of the plant, and although it is less strikingly beautiful than many of its congeners it is sufficiently attractive to merit a greater share of attention than it receives. The flowers are of moderate size; the falls are frimbriated round the margins, crested in the centre, bright lilac colour spotted with yellow and white; the standards being of a similar shade of lilac, but without the markings. *I. nepalensis* is a bold and handsome form with large flowers, possessing falls and standards of a rich purple and lilac colour, the crests being bright yellow, contrasting with the darker ground colour. It is found in the Himalayas at various elevations above 6000 feet, and first appeared in England about fifty-six years ago, but is still comparatively rare. *I. speculatrix* is chiefly interesting as the only species indigenous to Hong Kong, where it is cultivated in the gardens, and flowers in April and May; but it has at present only reached this country in a dried state.

The species *I. tectorum*, represented in the annexed engraving, is unquestionably the most beautiful of the section *Evaasia*, and should on no account be excluded from a collection of Irises. It is a native of Japan, where Dr. Hance obtained living plants and transmitted seeds of them to Mr. Bull of Chelsea about seven years ago, and in the latter gentleman's nursery the plants first flowered in 1874. Plants were also raised in the Royal Gardens, Kew, and flowered in the border devoted to Irises in the herbaceous grounds. The rhizomes of *I. tectorum* are very narrow and winding, scarcely an inch in diameter. The stem is about a foot in height, and bears the pale green leaves chiefly in a tuft at the base. The flowers are rather large; the falls are broad, slightly crisped at the margin and purplish lilac in colour, veined with a darker shade, in the centre being a deeply cut lilac and white crest. The standards are roundish in form, spreading and shorter than the falls, tinged with pale lilac. This species is not only the best of the group, but it will rank among the finest Irises in cultivation, and its requirements being few no great difficulty is experienced in obtaining it in good condition. Ordinary garden soil in a border that is not too exposed suits it admirably.—L. C.

STRAWBERRIES IN POTS.

MANY have been surprised by their success in forcing Strawberries after so unfavourable a preceding season. The plants in pots made very late growth last season, and the crowns were extremely small and pointed in the autumn. Notwithstanding they have fruited admirably, the best with us have been Vicomtesse Hericart de Thury, always to be depended on for setting and swelling freely; La Grosse Sucrée is nearly as free and has larger fruit; Sir Harry sets and swells kindly; President has succeeded better than usual, having produced enormous trusses with plenty of foliage, and fruit weighing from 1½ to 2 ozs.; Sir Charles Napier is large and handsome, and Dr. Hogg the best of late forcing Strawberries. The above are the best half dozen that I have grown for forcing, are given in order of their adaptability for the purpose. Black Prince is subject to mildew, and the fruit is small; Sir Joseph Paxton, though perhaps the handsomest of Strawberries, is also very subject to mildew; James Veitch is large and handsome and forces well, but is very poor in flavour; Unser Fritz is better than many in respect of flavour, but is only suitable

for late forcing; Wonderful forces well; and Dr. Moris, an improvement upon Duc de Malakoff as regards colour, is good for the same purpose.

The difficulty now will be to keep the plants well supplied with nutriment at the roots, for if they ever become dry when the fruit is swelling they are almost certain to be small, and a similar result follows a drying current of air directly on the plants, the fruit scarcely swelling afterwards and always having a rusty appearance. Turves to stand the pots upon, troughs and saucers, are often resorted to as a preventive of dryness, but the plants succeed better without them if they are properly supplied with weak liquid manure after the fruit is set until it commences colouring, when clear water only should be supplied in moderate quantities. To swell off Strawberries satisfactorily they require a rather moist and genial atmosphere with brisk heat, but when ripening a drier atmosphere accompanied by free ventilation is advisable to give flavour. To maintain an unbroken supply it may be necessary to accelerate the growth of some plants by moving them to warmer quarters or to retard others. It is hardly possible to grow Strawberries under glass without their becoming infested with red spider, hence as soon as the crop is gathered the plants should be removed at once. If required for planting-out they should be dipped in a solution of soft soap, 4 ozs. to the gallon of water, and may be stood in any sheltered situation until ground becomes vacant by the removal of early Peas or Potatoes, when they may be planted out with a certainty of affording a full crop of fruit another season.

For autumn fruiting a reservation should be made of the cleanest plants, standing them on ashes; and after the plants become hardened they may be turned out of the pots, be partially disrooted and returned to the same size of pot in fresh compost, placing them on a north border until the potting is recovered from, when they should be removed to an open situation. They must be well supplied with water, and have the runners removed as they are produced. Sir Harry is the best for autumn fruiting.—G. ASBEY.

OUIVRANDRA FENESTRALIS.

THIS aquatic plant was introduced into England in the year 1856. It is a native of Madagascar, where it grows on the margins of rivers and streams. It luxuriates most freely where it is found shaded with trees and other low-growing shrubs.

It is now to be found in most gardens in the British Isles where there is any extent of glass; but unfortunately we do not often see it in a healthy and thriving condition, which I think is much to be regretted, as when well grown it is greatly admired and appreciated. I will endeavour to give, for the benefit of those of your readers who may not have been so successful as myself with this charming and most singular aquatic, a few practical hints on its cultivation. I grow it in a circular glass 1 foot deep and the same width top and bottom. The glass is placed in the East Indian Orchid house, with Pitcher-plants and *Saccolabiums* hanging over it suspended from the roof of the house. The bottom of the glass is covered with inverted thumb pots, the interstices being filled with a few sea shells, and on these a layer of live sphagnum moss is placed. The compost consists entirely of dried road scrapings which have been laid in a heap some time, with a good dash of sharp silver sand incorporated. About 3 inches of the soil is placed on the moss, and the Ouirandras are planted with their crowns just above the compost, carefully spreading out the roots. The water should be poured in with a fine rose watering pot, not covering the plants with more than with 2 inches of water until they have started into growth. It is very important that they have fresh water at least three times a week. I draw out the water with a piece of lead pipe, so that the soil is not agitated. I do not use stones or tiles or any other hard substance of any description to keep down the soil. One great point is to keep the plant thoroughly shaded from the direct rays of the sun in the summer months. The temperature of the house is from 58° to 64° in winter. In summer it is allowed to run up to 90°, which I have found from many years' experience to suit this interesting aquatic plant.—W. R.

THE LATE MISS HOPE OF WARDIE LODGE.—How sad it is to read of the death of this estimable lady gardener! It was only a few weeks ago since she wrote me in her usual vigorous hand, and I have now before me one of her favourite plants, one of her last gifts to me—*Ficus diversifolia*; the curious

Kyllingia monocephala came in the same package with a specimen of the Japanese Pepper Plant and some rare hardy flowers. Those gardeners who were favoured with her correspondence have lost in her a friend. All lovers of gardens, all readers of garden literature, will mourn her loss sincerely.—**DUBLINERS.**

EARLY MAY IN A CORNER OF KENT.

NOW May is a week old one expects signs of summer, but "Winter lingering still chills the lap of May." Not a blossom as yet shows its snow on the Hawthorn, while the breezes that sweep strongly over the more exposed parts of the district are quite icy in their keenness. Sometimes the dull weather that has prevailed for the last three weeks gives place to clear skies of profoundest blue, but the same bleak wind is for ever on the march, and makes the eyes smart as you lift the head to look at the wondrous wreaths of blossom massed on the Cherry trees of the country orchards. Plum trees are scarcely less heavily burdened with bloom; Apples just breaking into tint, but except in sheltered spots not expanded; yet Hop bines look fairly—tying has just begun.

All along the deep and lovely lanes Primroses are still in their very prime, relieved here and there, or rather contrasting strongly, with occasional tufts of Dog Violets. The undergrowth is also rich with wild Strawberry and *Stellaria*, and bright with the vivid green of the Wood Sorrel. Between the copse sheets of wild Anemones gleam in semi-transparent tints of white, opal, faint pink, or pale greyish blue. No tree is as yet in full leaf, the Horse Chestnut being the most advanced, but the creamy buds are still for the most part shut.

Passing from woods to gardens I hear on all hands how heavy have been the losses in Rose trees, Myrtles, and even hardy evergreens during the past winter. Flowering shrubs are decidedly backward, and the cold nights check vegetation everywhere. In some large nurseries admirably placed as to soil and situation (Cripps's) the losses of Rose trees and plants generally have been comparatively insignificant. The same firm showed me a large and very beautiful new seedling *Clematis*, white striped with rosy pink, one band down each petal.—**A. M. B., Tunbridge Wells.**

PYRETHRUMS FOR FORCING.

THAT *Pyrethrums* are very useful for mixed beds or the herbaceous border is well known, but it is not generally known that they are well adapted for forcing. I have had plants flowering for the last two months—indeed they commenced during the last week in February, and another year I hope to have more, so as to have a succession from Christmas to Whitsuntide. They are easily forced and are very much admired, not only in the greenhouse but as cut flowers for vase decoration, for which purpose few flowers excel them, as they last so long in water. I advise all who have plants to treat them exactly the same as the useful *Spiraea* (*Hoteia*) *japonica*; they will find them useful companions, for what suits one suits the other.

I am not able to give a list of the best varieties, as I have only half a dozen under my charge with a name for only one of them; and it is very bright, a fiery scarlet, that was purchased from Van Houtte some years ago under the name of Beauty of Laeken. *Pyrethrums* thus early are a novelty in our neighbourhood, and have been a decided acquisition to our stock of winter-flowering plants, and the foliage is also very useful, having a very Fern-like appearance. I send you some flowers.—**W. W.**

[The flowers are bright and good; we have not seen any like them so early in the season.—**EDS.**]

NOTES ON VILLA AND SUBURBAN GARDENING.

ROTBEDS.

Cucumbers and Melons.—In many instances the bulk of the bedding plants if not planted will be hardened off by the end of this month, thus setting at liberty the frames in which they have been placed. These frames, instead of being allowed to stand empty for some months, ought at once to be utilised for a crop of Melons and Cucumbers, which if not wanted for home consumption may in most districts be readily sold or satisfactorily disposed of as the owner may determine. In anticipation of this work prepare the heating material (a great quantity is not required) by frequent turning and watering if necessary. Seeds also should be sown at once in another hotbed if possible, as plants raised in the houses

are very apt to be infested with the various insect pests to be met with in heated structures, and which are very difficult to eradicate from frames. Of Melons the following varieties are suitable and easily grown:—Green-flesh—Dell's Hybrid, Golden Queen, Earl of Beaconsfield, and Victory of Bath. Scarlet-flesh—Read's Hybrid, Scarlet Gem, and Bloxholm Hill. Of Cucumbers Carter's Model, Alnwick Castle, Lion House Improved, and Sutton's Duke of Connaught, giving the preference to the first and last. Telegraph is not a good summer variety, being very liable to the attack of red spider. The growth of plants of Cucumbers now in full bearing should be trained thinly and frequently stopped beyond the fruit, or otherwise it soon becomes crowded. Water occasionally with liquid manure, nothing being more safe or efficacious than the drainings from a farm or cowyard. This should be diluted with sufficient hot water to render it rather above the temperature of the hotbed. Thin out the young fruit rather than crop heavily, the effect of overcropping usually being an early collapse.

Crops to Succeed Potatoes.—The early Potatoes not unfrequently are lifted before the heat of the bed is exhausted, and they may with advantage be at once followed with a crop either of Kidney Beans, Vegetable Marrows, ridge Cucumbers, and even Tomatoes. In either case the plants should be prepared by the time the frame is at liberty. The Beans may be sown singly in 3-inch pots, enough being sown to make three rows for each light, the plants to be placed about 9 inches apart in the rows. One, or at the most two, plants to a light of either the Marrows or Cucumbers will be ample. The Tomatoes may either be planted in lines running from north to south, about three to a light and 18 inches apart in the rows, or about eight plants may be flatly trained, those planted thickly being trained nearly upright.

BEDDING PLANTS.

Such annuals as Antennas, Stocks, Zinnias, Marigolds, Godetias, *Helichrysums*, Petanias, Ferillas, and others raised from seed should be pricked off in a light and rather rich soil either in boxes or on a slight hotbed, and kept rather close and shaded from bright sunshine for a few days, and be eventually hardened off and planted out before becoming much drawn. It is a mistake to sow early and then allow the seedlings to remain in the seed pans a long time, as the three first mentioned in particular must be well grown in their early stages if good heads of bloom are expected. The single Petunias are well adapted for and are very effective in a dry position, and the same remarks apply to the Tom Thumb section of the dwarf *Tropaeolums*. *Calceolarias* should be planted early, in order to have them established before the weather becomes very hot and dry, and so also should the bedding Violas. The blue kinds of the latter are very effective when mixed with bronze Zonal, Tricolor, golden or silver variegated *Pelargoniums*. The dwarf French Marigolds, notably the Miniature Orange, are good substitutes for yellow *Calceolarias*, and are more to be relied on. *Tagetes signata pumila* is also similarly used, but is inferior to the Marigolds. Seedlings now fit to prick out will soon make good plants, probably superior to those from seed sown much earlier.

Coleus Verschaffeltii, *Iresine Lindenii*, *I. Herbstii*, and the *Alternantheras* may still be propagated, as they make good plants by the time required, which should be when all the others are planted. They should not be much exposed during this month, or they may experience a check from which they will not quickly recover. Water sparingly when first put into cool quarters. *Amaranthus melancholicus ruber* is a good substitute for *Iresine Herbstii*. Seedlings now pricked into small pots soon attain a good size, or the operation may be delayed if pots are scarce till some of the *Pelargoniums* are planted. *Amaranthus Henderi* will not succeed in cold districts, but some of the varieties to be obtained in each packet are very beautiful and worthy of a place in a greenhouse. Prick off the young plants into small pots, and those intended for pots may be gradually shifted into 8-inch pots.

Mesembryanthemum cordifolium variegatum cannot be readily transplanted from boxes, and for this reason the plants should be potted off singly in the smallest pots. Plants of *Abutilon Thompsonii* should also be potted off singly. Variegated Maize (*Zea japonica*), Castor-oil Plants (*Ricinus*), *Acacia lophantha*, *Chamaepeuce*, *Solanums*, and *Cannas* from seed, should all be potted off and grown to a good size before being placed out. All bedding plants may be placed in a rather light and rich soil, and where boxes are used they should be made shallow, especially for the more delicate kinds. *Echeveria secunda glauca* and the hardy *Sempervivums* may at once be planted in the positions assigned them, and some progress should be made in the carpet beds where such hardy plants as *Pyrethrum aureum*, *Sedums*, *Menthas*, and others are used. Carpet beds require many plants to fill them, and should not be attempted unless they can be well done.

WORK FOR THE WEEK.

KITCHEN GARDEN.

POTATO haulm in many localities has suffered from frost, for the temperature during the night of the 29th of April fell to 28°, or 9° below freezing point, but where attention has been paid to earthing-up or covering with a little litter no injury has been done.

In heavy soil employ the fork between the rows, and attend to the final earthing-up, which need only be sufficient to prevent the tubers becoming green. As the later crops of Potatoes advance in growth keep the soil drawn up to the haulm; and if it is intended to plant Brussels Sprouts and other winter or spring vegetables between the rows, they should be planted as soon as possible after the Potatoes are earthed up. Proceed with planting the most advanced Celery plants, which must be well hardened off first. The plants may be placed in beds 4 feet 6 inches wide in rows across the beds 15 inches apart, and the plants 12 inches asunder. A space of about 8 feet should be left between the beds to facilitate watering and to afford soil for earthing. This plan is only available for crops intended for autumn use, as Celery in beds is more liable to decay during the winter than that planted in single rows. Make successional sowings of Turnips on a north border. If it be needful to make a supplementary sowing of Parsnips and Carrots it may be done now. Seed beds of Broccoli will require constant attention to prevent the ravages of slugs and Turnip fly. The best plan is to dust the plants whilst moist with dry wood ashes or quicklime; similar remarks apply to Turnips. Continue to thin and prick out the required quantity of Cauliflowers and Brussels Sprouts as they become fit. Spring Cabbage being now plentiful, clear away the old stems left to furnish greens, as their presence greatly tends to impoverish the soil. In light soils a mulching 2 or 3 inches thick of partially decayed manure is a very commendable practice. To gardens that have been established some time, and in which through high cultivation the soil has become friable, this is the best means of applying manure during the hot months of the year. The vegetables most benefited in this way are Peas, Runner and other Beans, Cauliflowers, and Globe Artichokes. Prepare for sowing late crops of Peas, and where the soil is dry and hot make trenches and employ manure as for Celery. Few varieties if any excel *Ne Plus Ultra*, which should be sown at once and again in a fortnight. Other varieties of late Peas may be treated similarly. Make successional sowings of Broad Beans, also Dwarf Kidney or French Beans. Lettuce seed should be sown in drills, and avoid transplanting. Asparagus intended for forcing next season should not be cut, as it not only has a weakening tendency, but prevents the early maturity of the crowns. Rhubarb also should not be cut for the same reason, but allow of an early growth and consequent early maturity of the crowns. Plant out Vegetable Marrows and ridge Cucumbers. Take out a trench 8 feet wide a spit deep, place in 18 inches to 2 feet thickness of leaves and stable litter, two-thirds of the former to one of the latter, and cover with about 1 foot thickness of soil formed into a somewhat flat-topped ridge, 6 feet space being allowed from centre to centre of the ridges. The Vegetable Marrows should be planted 6 feet apart, and the Cucumbers 4 feet, after the soil becomes warmed, covering each with a handlight with a moveable top. A warm situation should be chosen and sheltered from winds. Forward Chilis and other Capsicums in pits, having them strong and well hardened off preparatory to planting in June. Harden Tomatoes by degrees in cold frames preparatory to planting out of doors at the end of the month. Do not keep them cramped in small pots, but afford root room as required, the object being to have plants in a forward state when planted out, and so give them a chance of setting their fruit before half the summer is over. Carrots in frames must be liberally supplied with water. French Beans should be copiously watered and afforded liquid manure liberally. Cauliflowers, early Peas, and Lettuces will also need frequent watering in hot weather. Amongst other matters requiring attention will be thinning the various kinds of spring-sown crops. Onions should be thinned out gradually, as there is generally a demand for spring Onions, and where pickling or button Onions are in request the thinnings of the main crop may be replanted thickly in drills. Parsnips should be thinned out finally to about a foot apart, but in thinning Carrots as many more as those which will ultimately be required should be left, so as to admit of every alternate plant being drawn for early use, which may be done without detriment to those which are left for the main crop. If a dressing of soot or guano be given in showery weather it will tend to promote healthy growth. Autumn-sown Onions will now be coming in, and in removing those for use care should be taken to leave some of the most promising if fine examples are required. Ply the hoe freely between the rows of growing crops to destroy weeds and encourage the growth of the crops, not allowing weeds to get ahead, or they will give much trouble, besides impoverishing the ground.

FRUIT HOUSES.

Peaches and Nectarines.—The trees in the house started at the beginning of the year will be stoning, and should not be subjected to a higher temperature than 60° to 65° by artificial means, commencing to ventilate at 65°, and not allowing 75° to be exceeded without full ventilation. The shoots should be tied-in as they advance, removing superfluous growths, as it is important that no more shoots be trained-in than can be fully exposed to light and air. If the shoots are crowded thin them well as soon as the stoning is completed. Allow one fruit to every square foot of trellis covered with foliage, which will be one to each shoot of last year, although vigorous shoots may be allowed to carry two

fruits, so by apportioning the fruit according to degrees of vigour the evenness of vigour may be maintained throughout the tree. After stoning maintain a good moisture in the house, and water the inside border copiously, which in well-drained borders will not be required less than once a week, mulching the surface with about 2-inch thickness of short half-decayed manure. Unless it is desired to accelerate the ripening continue 60° to 65° as the night temperature, and 65° artificially by day in dull weather, and 75° with sun heat, closing at the latter with plenty of moisture in the house. In a high temperature and moist atmosphere Peaches swell to a great size after stoning, but are not so tempting a appearance or so well flavoured as those in less heat and moisture, and freer ventilation. Trees started in February will also shortly be stoning, and should have their number reduced, leaving two fruits upon strong shoots. The fruit retained in all instances should be best situated for exposure to light and air. Thin-out the shoots where overcrowded. The temperature by artificial means may be kept at 55° to 60° at night, and 60° to 65° by day artificially, ventilating from 65°, and fully between 70° and 75°. In the house started in March the fruit will be swelling, and should be freely thinned. It can now be seen which fruits have taken the lead. Two or three will be ample to leave on strong shoots, and proportionately less on weaker growths. Afford liquid manure to weakly trees, but vigorous trees being more prone to cast the fruit should have clear water only. All superfluous shoots should be removed, the remaining growths being tied to the trellis as they advance. Disbudding and heelings of the shoots must be continued, also thinning the fruit in the latest house. As there is a general failure of these fruits outdoors it should be freely admitted in the late house on all favourable occasions, so as to have the fruit ripe at the same time as the crop outdoors instead of preceding it, as in an ordinary season. Examine all inside borders at least once a week, giving thorough supplies of water when necessary, and syringing the trees twice daily, except those ripening the fruit, so as to keep red spider a check. Unheated houses should be closed rather early in the afternoon, syringing the trees at the same time if the weather is bright.

Pines.—The variable weather generally experienced at this time of year renders careful attention indispensable in the treatment of Pine Apple plants generally, especially those with the fruits in an advanced condition of growth. Where plants are cultivated in pots and large well-finished fruits are desired strict attention must be paid to details. Watering is an important matter, success depending very much upon its careful application. Indiscriminate periodical supplies are inconsistent with the requirements of the plants, but they should be examined weekly, and to such as need it copious supplies should be afforded. Plants where the bottom heat afforded by hot-water pipes will need more water than such as derive the heat from fermenting materials; but under either of those conditions, the roots of the plants being in a satisfactory condition, abundance of water will be frequently required, an occasional admixture of guano being beneficial. Admit air at the top of the house when the temperature stands at 80°, allowing the heat to increase to 95° with full ventilation, closing at 85°. Fires will be necessary to prevent the temperature falling below 70° at night and 75° in the daytime, keeping the bottom heat steady at from 80° to 90°. Syringe the house and plants two or three times every week to secure the perfect development of the fruit. Continue former directions for other stock.

FLOWER GARDEN.

Lawns will now require frequent mowing and rolling, as the grass grows rapidly at this season. Coarse weeds, such as Pansies, Dandelions, and Daisies, are a great disfigurement to lawns. Perseverance in grubbing them up is the most effectual method; and if their removal cause any bare places in the turf, a slight top-dressing of soil should be rubbed into the holes with the back of a rake, and a few seeds of fine grass seed and white and Seckling Clover sown. Grass edges that have not been trimmed with the edging knife must now be attended to; it is most neatly and expeditiously performed after rain when the ground is soft. The edges generally squeeze out under the roller and extend during the summer as to admit of a small portion being removed every spring, which facilitates the cutting afterwards with the edging shears. Gravel walks soon become infested with weeds, and time spent upon their removal now will save much labour later on. Walks that are discoloured, or covered with small weeds or moss, should be broken up with a hoe to the depth of an inch, and have the surface well raked occasionally in dry weather, which will effectually destroy the moss and weeds and brighten the gravel. Whilst the walks are broken up advantage should be taken of adding a little fresh gravel if necessary. Recently transplanted shrubs must have water if the weather prove dry, and a slight syringing overhead will be very beneficial in counteracting the effects of rapid evaporation. Mulching and securely staking are matters of first importance. Roses will now require attention to prevent the Rose maggot from destroying the bloom buds. Examine the bushes frequently, and any curled leaf or those folded together should be squeezed between the thumb and finger. The

cold easterly wind has retarded the growth, and insect pests are generally abundant. Green aphides are often very troublesome. Tobacco water, consisting of one gallon of tobacco juice to six or eight gallons of water applied with a syringe is the best remedy, or shoots of sufficient length may be dipped in it. Tobacco powder is also effectual if applied in the morning whilst the leaves are damp. Annuals of all kinds have come up well and will require timely thinning out. Sweet Peas, Tropaeolums, and Convolvulus should have supports of some kind by the time they are 6 inches high.

PLANT HOUSES.

Vines.—The weather has been favourable for forcing operations. The sun has rendered very little fire heat necessary by day. Red spider has been increasing, and if inside borders have not been well supplied with water and liquid manure, and atmospheric moisture well sustained and impregnated with ammonia, this pest will be found very troublesome. In desperation some growers resort to the syringe, which, when the Grapes are not in a forward state and clear soft water employed, is in skilful hands practised with little if any injury to the perfecting of the Grapes, but when the Grapes are well advanced for ripening its use will irreparably damage the bloom. Sponging or brushing the leaves is at best but partial; the best remedy after all is the judicious application of sulphur to the pipes, applying it rather thinly, and if the pipes are highly heated to the return pipes only. Where the Grapes are ripe the dung, leaves, and litter that have been employed on outside borders may be removed, leaving sufficient to form a mulch in dry weather. The laterals should be kept closely stopped, and the inside border must not be allowed to become dry, keeping up a circulation of air by fire heat as necessary, and allowing the temperature to fall to 60° at night. Examine the borders of succession houses once a week at least, and water abundantly when dry. Inside borders, if the drainage be good, may receive a large supply of water, liquid manure being given at every alternate watering, or sprinkle the border with guano before watering so as to wash it into the soil. Outside borders will not need any water, the rainfall of last month having made them thoroughly moist. Attend to thinning, stopping, &c., as advised in former calendars. Late varieties now making rapid progress must be tied out and stopped as soon as they have made growth sufficient to cover the trellis with good foliage, after which remove all useless shoots. Newly planted Vines should be closely watched that they do not suffer from overdryness. Allow all the wood to remain that can be exposed to light, but supernumeraries intended for fruiting next season should be confined to one rod or cane, and the laterals stopped at the first joint. Vines in pots for fruiting next season should receive their final shift without delay. They require generous treatment, abundant light, and should be stopped when they have made canes 8 or 9 feet long.

TRADE CATALOGUES RECEIVED.

George Cooling, Bath.—*Catalogue of Roses, Clematises, Liliums, and Bedding Plants.*

V. H. Hallock & Son, Queens, N.Y.—*Catalogue of Lilies.*

S. Bolton, Nelson, New Zealand.—*General Catalogue of Plants.*

John Morse & Sons, Dursley, Gloucestershire.—*Catalogue of Cuttings.*

E. G. Henderson & Son, Maida Vale, London.—*Catalogue of Flowering and Ornamental Plants.*

TO CORRESPONDENTS.

WILD FLOWERS OF GREAT BRITAIN (W. R.).—Ten volumes are now ready, and another will complete the work. The price of the volumes is 2s. 6d. each, and all the back numbers can be had at 1s. each.

CUCUMBER DECAYED (J. N.).—There is neither insects nor eggs on the end of the fruit sent; the substance is merely an exudation from the fruit, which has assumed a form that led you to mistake its real character.

STOCKS AND ZINNIAS (Freemason).—If the plants are grown thinly from the first, and are sturdy in character, it is not necessary to pinch off their tops. When grown in rich soil, as they should be, they produce side growths freely, and also finer flowers than when the plants have been topped.

STRAWBERRY RUNNERS FOR FORCING (J. C. R.).—Secure the earliest healthy runners you can obtain of approved varieties, whether they are produced by plants that have previously been forced or not.

CUTTING DOWN HEATHS (Idem).—Only the softwood kinds, such as Erica Willmoreana and E. hymalis, should be cut down after flowering, and these not too closely. Hardwooded Heaths must have no such pruning as you imply, but when growing freely the young growths may be occasionally pinched early in the season to induce a greater number of flowering points, but the pinching must not be done without due thought and consideration as to the state of each plant and the habit of the variety.

HARDY CLIMBERS (H. S.).—Ampelopsis berceades, Clematis Vitalba, C. montana major, C. Viticella, and Jasminum nudiflorum are very hardy, and would probably succeed. Have you tried Irish Ivy? It is the quickest in growth, and succeeds in exposed situations.

CATERPILLARS ON WALL TREES (A Subscriber).—They appear to be the caterpillar of the Hawthorn or Black-veined Butterfly (Pteris crataegi) and may be destroyed by first syringing the trees and then dusting with white hellebore powder.

ADIANTUM CAPILLUS-VENERIS IN CORNWALL (J. W. M.).—This Fern is a native of Britain, and is found in a wild state in many places besides

Cornwall. A. V. cornubiense, referred to by Mr. Roberts, is a distinct variety, with larger fronds and more deeply cut pinnae than those of the species.

CUCUMBERS NOT SWELLING (Somerset).—The fruit sent indicates that fertilisation has not been satisfactorily effected. Possibly at the time of flowering the weather was dull, and the atmosphere of the house too moist for the free dispersion of the pollen. Try artificial fertilisation with a few flowers, and do not syringe them for a few days, and we think the fruit will set and swell freely.

PLUMS NOT SETTING (G. C.).—Judging by the foliage received the tree is extremely vigorous, and excessive vigour, not unfrequently results in the casting of the fruit. If this is not the cause of the fruit falling from your tree there has most probably been a defect in the fertilisation of the flowers by the pollen not having been freely dispersed. Moreover, some varieties set more freely than others, and the fruit swells with greater certainty.

INSECTS IN SOIL (A Regular Subscriber).—They appear to be minute weevils of some kind, and we fear you cannot destroy them without removing the soil. You might, however, remove it from round the stems and surround them with charcoal dust; also from the surface of the bed, adding a rich dressing of manure and soil obtained from another source. Possibly an application of paraffin, an ounce to a gallon of water, and well agitated during application, might check the insects and not injure the roots.

DISSOLVING BONES (A. K.).—Take a large watertight hoghead, and cover the bottom with about 6 inches deep of dry soil; on this put a layer of bones of the same depth, and cover them entirely with wood ashes; on these another layer of bones, then ashes, and so on till the hoghead is full. Leave it exposed to the rains all summer and winter till spring; then on removing the contents of the hoghead the bones will crumble to powder under a slight pressure, and form one of the most valuable manures ready for immediate use.

ASPARAGUS UNSATISFACTORY (Mid-Surrey).—Without knowing more particulars, such as the nature of the soil and whether any heads have been cut, it is impossible for us to tell why your Asparagus is not satisfactory. It will grow well in any well-drained, deeply trenched, and rich light soil, and it does not become strong enough for cutting until the fourth year from seed. It is early yet, and your beds will probably improve during the summer. Give them a dressing of salt, making the ground white, as if it had received a shower of hail, and do not cut any heads this spring.

AURICULA GROWERS (H. E. B.).—The addresses of the successful exhibitors at the National Auricula Society's Show that was held at South Kensington on the 20th ult., are incorporated with the report of that Show in our issue of the same week. Seed of Auriculas sown now would not produce flowering plants next year anything like those exhibited; with good culture a few of the plants might flower then, but they would not be fine until the second year. You cannot hope to obtain varieties equal in merit to those exhibited from purchased seed. The principal amateur growers do not grow seed for sale.

SULPHATE OF AMMONIA AND NITRATE OF SODA (A. H.).—The quantity to be given to plants in pots must vary with the kinds of plants cultivated and their condition. Half an ounce to the gallon of water of either of these fertilisers is sufficient for Chrysanthemums in full growth, and much less will suffice for most other softwooded plants. Liquid manure should not be given until the pots are full of roots and the soil is partially exhausted of its nutriment. Instead of using soot in conjunction with the fertilisers named we should use them alternately. For dressing outdoor crops, such as Onions, with nitrate of soda, 1 oz. to 1½ oz. sprinkled on each square yard of soil between the plants will be sufficient. It is best applied during showery weather.

FUCHSIAS FOR EXHIBITION (Cottage Gardener).—You ought to grow a few more varieties than the number you intend staging so as to have a selection, as many varieties are equally good for the purpose, and all do not thrive alike every year. Good light varieties are Mrs. J. Lye, Marginata, Starlight, White Souvenir de Chiswick, Covent Garden White, Beauty of Trowbridge, and Annie. Dark varieties: Albert Victor, Wave of Life, Lord Elcho, Improvement, Prince of Orange, Victor Emmanuel; and single white corolla, Mrs. B. Bennett; double white corolla, Mrs. H. Cannell; dark sepals and striped corollas, Bland's New Striped, and Striata splendour.

PELAGONIUMS FOR POT CULTURE (Idem).—*Zonals*.—Single: Corsair, Mr. Parker, J. O. Musters, Lady Emily, Mrs. Turner, and White Vesuvius. *Double*: Wonderful, Gambetta, Emile Girardin, Eugene Bandonin, Louis Bandonin, Candidissima plena. *Show varieties*: Prince Leopold, Ruth, Artist, Nabob, Corsair, and Woman in White.

THE STAR OF BETHLEHEM (W. W. Hodgson).—The specimens you sent under the above name are known to botanists as Ornithogalum nutans, the Drooping-flowered Star of Bethlehem, so named to distinguish it from the true Star of Bethlehem, O. umbellatum, a native of Greece, which is believed to be the Ornithogalum of Dioscorides. Your plant is also known as the Neapolitan Star of Bethlehem from its being plentiful in the neighbourhood of Naples. The term Star refers to the shape of the flower, but Bethlehem is merely honorary. It is found wild in various parts of Europe, whence it was first introduced to English gardens, and it may now be considered as a native plant, being by no means uncommon in some parts of the country. The bulbs, if increase is needed—not otherwise—should be taken up when the leaves die, and if planted in a somewhat sheltered position no doubt you will succeed in your object.

VINES UNFRUITFUL (One is a Difficulty).—The growths sent indicate that the roots are penetrating into ungenial soil in search of food that they cannot obtain. We do not understand your mode of lifting. Vines producing such shoots as those sent must have roots much larger than penholders. All the roots need lifting, and probably the chief of them are below what you call the border, having gone straight down into the subsoil. Train the laterals very thinly so that every leaf is fully exposed to the sun, and very early in the autumn search for some larger roots than you have yet found, and place them in good loam with lime rubbish, bones, and plenty of wood ashes intermixed. Do this a month before the leaves change, and shade if needful to prevent flagging, and fresh roots will commence forming the same autumn. By securing an abundance of active roots near the surface the growth of the Vines will be short-jointed and essentially fruitful in character. The wood sent was not well ripened in the autumn, and the young shoots appear to have been too crowded. You cannot train them too thinly.

GOOSEBERRY BUSHES UNFRUITFUL (*Busy*).—The portions sent indicate that the growths have been too crowded in summer, and then too closely pruned in winter. Your soil we presume is good, and the district rather dull and moist, therefore the bushes have a tendency to grow too exuberantly. Under these conditions it becomes the more important that the bushes be thin during the summer, in order that the growths can have all the sun and air possible to effect their maturation. Thinning out a portion of the shoots in summer is in the case of your bushes very advisable, indeed they cannot well be too thin; some of the superfluous branches may even be cut out now and several of the gross shoots be rubbed off, retaining those of a more short-jointed character. By keeping the bushes well thinned throughout the growing season comparatively little pruning will be required in the winter, only the side growths will want spurring in a little closer, and the terminals slightly shortening to preserve the symmetry of the bushes; if the terminals are cut too closely still stronger growths will issue, but if left of a considerable length and matured they will form natural spurs of a fruit-bearing character.

SCHIZOSTYLIS OOCINKA (*idem*).—Good plants may be had by the different modes of culture to which you allude; but as the plants have been in pots for two years your safest plan will be to plant them out, reducing or dividing them if necessary to prevent them growing too large for your pots or purpose in the autumn. They require an open position and good soil. When the plants are kept in pots and not plunged there is danger of the roots receiving injury during hot weather; indeed much more attention is necessary in growing them in pots than planted out. Skillful cultivators can grow the plants well in pots, but those who are not skilled are less likely to fail by adopting the planting-out system.

BONES FOR VINE BORDER (*J. W.*).—They may be either broken up into small pieces and mixed with the soil, or may be reduced to superphosphate of lime by the aid of sulphuric acid. By the former mode their manurial action is rather slow but lasting, by the latter their beneficial effects are the more immediately apparent. If your Vines are in good condition and only need keeping so, we should simply crush the bones and mix them with the soil of the border; but if the growth indicates that a quick stimulant is requisite, we should then decompose them and apply the manure in the form of powder. To provide this place the bones on a stone or firm earthen floor and surround them with a rim of ashes; pour on as much water as the bones will absorb, then pour on sulphuric acid in weight equal to about half the weight of the bones, and they will soon be in a state in which they can be rubbed or crushed into dust, which may be sprinkled on the border at the rate of about 3 ozs. per square yard.

BOILER (*Fittaham*).—By increasing the size of the boiler you will have a larger furnace, and the consumption of fuel will be in proportion, not to the pipes to be heated, but to the capacity of the furnace for acting on the boiler surface. A 4-foot boiler furnace will hold considerably less fuel in a state of combustion than a 6-foot, and it does not follow that the fuel consumed by the former would answer for the latter—*i.e.*, give the same temperature to the water. The 6-foot boiler would consume one-third more fuel at least, with a result not better than is afforded by the 4-foot, for the heat in the furnace must be at its highest to secure the heating of the water quickly to near boiling point, and after this so little would be necessary from so excessive a heating power with the 6-foot boiler that so much air would have to be admitted as to make the waste of fuel enormous. A boiler that will raise the water in the pipes to boiling point in an hour is ample for its purpose. A larger boiler would not save fuel, but waste it, unless it were attached to a larger extent of piping. The 4-foot boiler would be more economical were the piping in the house increased, so that there would not be the necessity for working the fire so sharply, and it would not only save much fuel, but be better for the vegetation. The work done by the boiler is good, and the consumption of fuel is not excessive.

VALLOTA PURPUREA NOT THRIVING (*Constant Subscriber*).—You are quite mistaken in thinking that the plants "require drying off and placing in a cellar in winter." This practice would render the best of plants unhealthy. Without knowing the size of your plants and the pots they are growing, or dying in, with some particulars of the mode of treatment that has been adopted, it is not easy to recommend the best course for you to pursue; possibly the plants are overpotted and the soil is sour; or the root-action may be defective through improper or inert soil. The following cultural details extracted from our "Greenhouse Manual" will be of use to you, as also probably would the manual itself in respect of other plants on which you need information. "Single bulbs of *Vallota purpurea* may be grown in pots 5, 6, or 7 inches in diameter, and such are, perhaps, the most suitable for window or house decoration; or they may be grown in large pots, presenting a mass of foliage, and in September a magnificent display of flowers. The common practice is to remove the offsets; but this is a mistake, for they contribute to the display of foliage, and in no way interfere with the flowering bulb or bulbs. If the offsets are allowed to remain they attain a flowering state as soon as, or sooner than if they were taken off and placed separately in small pots. When increase is wanted divide the plant into two or more parts, each with a bulb large enough to flower, placing them in pots that will hold the roots without cramping. Repotting may be done in spring, but it is well not to let it be too frequent nor to give large shifts, for this and all bulbs do best with the roots always touching the sides of the pot, or when under rather than over-potted. We have not had them repotted for three years, and they do even better in that way than when potted many times in a year. Bulbs do not like their roots interfered with, more especially this and all that are evergreen. Once a year is quite often enough to repot, and as long as the drainage remains good they will not sustain any injury not potted for two or three years. Of course there are exceptions, but the only one is in the case of plants in a bad state of health, and this is mostly a result of overpotting, when there is a mass of soil and few roots. In repotting pick out all the soil that you can, remove the drainage carefully, and drain the pots efficiently. Let the pots be just large enough to hold the roots and admit of soil being worked in amongst them and all round. This is quite sufficient for all plants, large or small. The bulbs should be potted so that they may be about half covered with soil. About half an inch should be left below the rim of the pot for watering, and the compost should be moderately dry, so that the soil can be made firm. A compost of two parts good loam or yellow turfy loam, one part sandy peat, and one part leaf soil or well rotted manure, will grow the *Vallota* well, adding sand if the soil be deficient of it. Water moderately after potting, give plenty of water when the plants are growing freely, and continue this up to August; then give no more than enough to keep the foliage fresh until the flower-scapes appear; afterwards water copiously until the flowering is past, then reduce

the amount and keep the plants rather dry over the winter, but do not permit the foliage to become shrivelled." The price of the manual is 10d. post free.

EARLY YELLOW CHRYSANTHEMUM (*idem*).—There are several of our *Chrysanthemums* as you describe, and their earliness is not due to the culture so much as to their natural precocity. Possibly the variety to which you allude is Hendersonii, but equally early are the following, some very even earlier, and all are worth growing—*Frœscitæ*, very good; *Jardin de Plantes*, very early; *Andromeda*, and *Gold Button*.

ANTHURIUM SCHENCTERIUM (*S.S.*).—This beautiful plant is of very easy culture, succeeding admirably in a cool stove, and in a warm one is seldom out of bloom. In a cool stove it usually commences growing and flowering in March, and continues blooming until autumn, appearing all the better for a rest during winter. A position near the glass is desirable, so that its leaves are about 18 inches from it, with slight shade from bright sun. Moderate ventilation only is required; but in that respect need not differ from the treatment usually given to stove plants. In potting all the old compost that can be removed is taken away, not of course injuring its roots, and pots about one-half the diameter of the spread of the leaves are used. Drainage is given to about one-third the depth of the pots covered with a layer of sphagnum, and the compost used is a mixture of fine brown peat, very fibrous loam, sphagnum, and charcoal in equal proportions and mixed, the roots spread out, and the stuff worked in amongst them and made rather firm, sprinkling with silver sand, and the plants are kept out and raised in the centre of the pots, the roots being just covered with the compost. A good watering is then given, and a neat finish is imparted by replacing the pots over the compost with green moss—the kind which is of a deep green colour, and has a fine effect. The plants are always kept moist in the spring, summer, and autumn. From February to October the plants are sprinkled overhead twice a day, and three times during the hot summer months, and with the thorough drainage daily watering will not cause any mischief. In winter the moisture from sprinkling the paths and that evaporated from the pipe troughs is ample, keeping just the plants moist at the roots by application of water as necessity demands. The cool end of your stove will be the best position for the plants, and the shading you name will be sufficient with otherwise good culture.

ORCHIDS UNHEALTHY (*idem*).—Some Orchids require a hot-house temperature, and others that of an intermediate house. Without knowing the names of your plants we cannot give you explicit advice on that point. According to your description of them your plants are kept much too dry; they require a moist atmosphere and the leaves should be frequently sprayed. Particulars are given from time to time in our "Work for the Week" column on the management of Orchids, and if the instructions there given are carried out the result will be healthy plants. They require more shade than ordinary stove plants, but it must be regulated by the growth of the plants, the state of the weather, and the period of the year.

NAMES OF PLANTS (*A. H.*).—*Chelanthus alpinus*. (*X.*)—The large leaf is that of *Sanguinaria canadensis*, the American Puccoon. The smaller leaf is too withered for identification. (*W. Brydie*).—1, *Palmaria officinalis*; 2, *Muscari botryoides*. (*Reader*).—1, *Stellaria graminea*; 2 and 3, too withered to be identified; 4, *Geranium phœnum*; 5, *Carlinae*; 6, *Anemone nemorosa*. (*D. E.*)—1, *Lysimachia nemorum*; 2, *Pedicularis sylvatica*; 3, *Corydalis lutea*. (*Mrs. B. S. Neale*).—The spray sent is of *Diplazium glutinosum*. A penny is due from you for postage, the stamp affixed being insufficient.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

CULTIVATION OF FLAX.

FLAX is a plant indigenous to several eastern countries, and is generally supposed to have come originally from the alluvial soils of Egypt formed by the overflows of the Nile. From the most remote period its fibre has been manufactured into textile fabrics. At the present day it is grown to a certain extent in all the countries of the north of Europe, but especially in Belgium, Holland, Russia, and Germany. We find on reference at the time we first began to cultivate flax (a considerable time ago) that the returns from the Board of Trade give an estimate of the growth in the United Kingdom of an average of 25,000 tons of fibre per annum, chiefly, however, the produce of Ireland. At the same time we find the following imports from abroad to consist of fibre, seed, and the seed manufactured into oil cakes, which will give an idea of the extent to which we pay foreigners for the different items of flax produce—*viz.*, 1,588,494 cwt. of flax, value £8,971,200; 616,947 quarters of flax seed, value £1,888,113; 85,000 tons of oil cakes, value £644,175; total value, £6,000,500. This was derived principally from Russia, Prussia, Holland, Belgium, and France, since which the imports are believed to have greatly increased; and when we look at these figures, and then consider the extraordinary importations of foreign corn into this country and the depression in our agriculture, it raises an idea: now the cereals are unprofitable, that we may well turn our attention to the extension of the growth of flax. The question of climate and soil suitable for its growth is shown by the price, which varies with the quality; and at the period when we grew

the crop the imports from Russia, the fibre of which being only of moderate fineness, only made about £48 per ton, whereas the superior texture of that grown in Belgium and Holland caused the price often to reach from £150 to £180 per ton. In speaking of the growth in this country and Ireland we find that some grown in Norfolk was worth £85 per ton, and some from Bedford county sold in Leeds for £100 per ton, yet in Ireland occasional superior samples made prices equal to the best Belgian produce. As farmers in this country are now anxiously turning their attention to products which yield a better price than the ordinary cereals per acre we recommend that the growth of flax be considered, and we proceed with details concerning the culture and management.

The cultivation has decreased considerably during the past ten or fifteen years in England, and we may suppose in consequence of corn and pulse making satisfactory prices until within the last four or five years. There is, however, another strong reason which has tended to reduce the growth, and induced us to pay less attention to it, for we found it difficult to dispose of the flax stalks, having no factories in our district for the scutching, and therefore being obliged to dispose of and transmit the produce to some distant factory. A great variety of soils are suitable for the growth of flax, but they must be perfectly dry, or made so by effectual draining. Sandy loams, light and heavy clays, alluvial soils, marly and peaty soils, will all produce it well under favourable circumstances; but a mixture of sand and clay is the most suitable, and especially where the subsoil is red or yellow clay. Very light sands are unsuitable. It has been known, however, that an Irish bog, after being drained and reclaimed, in the third year has produced a crop worth £70 per ton. We have always preferred a good sandy loam for growing flax, and one strong reason in its favour is that it works fine without much labour. Our plan is to plough in autumn, and prepare the land by cleaning as much as possible from couch and weeds, and then deeply plough for the land to lie during winter, the previous crop having been wheat, for which a good dressing of farmyard dung had been applied. The land will then be found sufficiently rich for producing an even and regular crop, because if dung is applied to the land just before sowing it is sure to make the plants grow coarsely and strongly, if not producing a laid or lodged crop, which makes the stalks coarse or injured by falling, so that the fibre is damaged in colour. In the early spring, as soon as the land is sufficiently dry, it should be harrowed and rolled until quite fine, and then left for about fourteen or twenty days to allow the weed seeds near the surface to germinate, and then by scarifying all the weeds near the surface will have been destroyed or removed, which is an important matter in a crop such as flax, when all the weeding must be done by hand very carefully. The home farmer must remember that in case he ventures to cultivate flax that it cannot be drilled, and thus enable the hoe to be used amongst the young plants; on the contrary, it is a matter of primary importance that the seed—about 24 or 8 bushels per acre, may be either homegrown or foreign, but free from weed seeds—should be sown broadcast, and nothing will distribute the seed with greater regularity than Bennett's seed barrow, which we use for sowing clover seeds. It is proved that unless the young plants grow very closely they will some of them become coarse and strong in growth, and thereby injuring the fibre and reducing the value of the crop.

With regard to the best way of sowing and covering in the seed, the land should lie rolled with the ring roller to receive it; then if the land is kind and dry a single time of the Howard's patent steel chain harrow will be sufficient to bury the seed. The land may then be rolled again with the ring roller in a transverse direction to that done before the sowing. The crop will now be left until the weeds begin to show and the flax plants are about 4 or 5 inches high; then if tilled as proposed, and weeds at sowing time hand-picked, nothing but large root weeds, such as dock and thistles, will injure the crop; these must be carefully removed by the women wearing a piece of woollen cloth tied under their shoes, in order that their tramping may not injure the tender plants of flax. The smaller weeds will soon be overtopped by the flax, which grows so rapidly in ordinary seasons, and therefore helps to keep the land clean, and as such may be valued by the home farmer as a fallow crop, and a good preparation for wheat and various crops in succession.

Various rules have been laid down for ascertaining the proper time to pull the flax. If pulled too soon the fibre will be fine, but there will be great waste, because the seed will be of little value. The best rule is to pull as soon as the seeds in the pods or bolls, as they are called, begin to grow firm and change to a pale yellowish or greenish brown colour, and when the stems have become yellow for about half or two-thirds its height from the ground. It is not unusual for the Belgian farmers to sell the crop standing to a factor who takes upon himself all the subsequent expense and risk, and the home farmer may do this in any district with advantage if he cannot obtain sufficient labour to have it done on his own account, or is unacquainted with the proper mode of proceeding in the work, or he may advertise for the sale in a newspaper circulating in the manufacturing districts where men are to be found to purchase standing crops.

The factor pulls and removes the flax to some favourite locality for steeping, where the several operations are performed on a large scale by expert workmen, which enables him to obtain a more valuable description of fibre than the home farmer would unless he has had previous skill and experience in the manipulation of the produce. It is, however, a frequent practice in Belgium for the farmer to pull, dry, and stack his flax, and afterwards offer it to a factor at a convenient time, for when properly dried and stacked the flax may be kept for any length of time. At the time of pulling the crop, if the growth is uneven the long and short stems must be kept separate, although it involves some extra labour for the women employed, and at the time of stooking when it is set up to dry the long and the short flax must be kept separate, as it has each a different value. This, however, does not happen when the land is fine and the crop even in consequence. At the time of harvesting the crop however, and before the bundles or sheaves are tied, all weeds must be carefully combed out, as if stacked with the flax the weeds will injure the colour of the fibre more or less, and consequently reduce the value; we therefore advise the home farmer to sell his crop to the factors unless he is well versed in the management and treatment of the stalks, in which case after being stacked he uses his own opportunity, making it a labour question entirely as to when he will commence the necessary operations for preparing the produce for the market. The preservation of the seed and separating it from the stalks is by thrashing or beetling when the flax is dry, or by ripping when it is green, in order to obtain the finest fibre (the former is, however, by far the preferable mode), as the seed will then be stored away for sale without drying, the same as ordinary grain. After carefully calculating the expenses of cultivating, seed, and harvesting, also rent and taxes on the one hand, and the value of the fibre, the seed, and the refuse flax on the other hand, we calculate a fair balance in favour of the grower as profit to vary from £10 to £12 10s. per acre under ordinary circumstances of situation and facility of sale for the produce.

WORK ON THE HOME FARM.

Horse Labour.—Incessant work for the horses will be required during the whole summer in consequence of the foul state of the land, caused by a succession of seasons in which it was scarcely possible to make a clean fallow. This applies to nearly all soils, for we find that even on the chalk stills or stonebrash land the difficulty of making fallows has been almost as great as that of the mixed soils of the vale farms of different districts; in fact, where land has been farmed upon the four-course rotation the foul state of the land is very unsatisfactory, because where wheat is sown out of clover lea and the previous fallows for roots not cleaned the grass and weeds accumulate immensely before the land comes in turn for a fallow again. Sowing Lent corn has been nearly completed, and upon all soils where properly managed all the early sowings look very regular and promising. Planting potatoes has been generally well done, but it should now be finished without further delay. A considerable extent of land has already been sown with mangold and carrot seed, and the sooner it is finished the better for the production of a full bulk and weight of produce. Sowing may, however, be continued for a fortnight yet, with a prospect of an average useful crop after rye and trifolium, for if the land is properly ploughed and worked fine immediately after, so that it may be made fine on the surface, it will then be moist enough to induce the seed to germinate as soon as sown. At the same time we have also found an advantage in sowing mangold seed after a fodder crop, because it does not suffer from insect enemies like it does after a long fallow. It is therefore only a question of liberal manuring and leaving the plants at hoeing time closer in the lines. This applies chiefly to the globe and tankard yellow varieties, because the long red sorts require to be sown early if a full crop is required. The preparation for Swedes and early turnips must be continued with all diligence, and as the land is so foul to save time the couch may be carted to heaps and there burned if ashes are required on the farm for drilling purposes; if not, the couch may be allowed to decay for laying out on the pasture land at a future time. In case pastures are closely fed and near at hand the couch may be laid and spread thereon at once, as it hinders the grass feeding but a few days and improves the growth immensely during the whole season afterwards. The carting off instead of burning in the field is recommended because it saves time and labour, the couch and weeds not requiring so much work as before burning, nor does the weather stop the carting like it often does burning in the field; and a further advantage is the next ploughing may be commenced and continued as fast as any portion of the carting is completed. In all land where the fallows are very much laden with couch steam culture should be resorted to, the horses following with the roller; in fact, we should arrange for all the severest work to be done by steam power, and thus relieve the working animals.

Hand Labour.—We notice on many pastures, especially in some wooded districts which we have surveyed lately, that the moles are making much work, but no doubt that they do great good and may be left to do their work of underdraining and manuring the turf. The molehills should be spread every third day with the

shovel; their castings then improve the pasture considerably, but upon all land where the scythe is required for cutting the crops the mules should be caught and kept down as much as possible. Sheep food is very scarce in most districts, and the irrigated meadows this year have not yielded the usual amount of grass. In many districts the rye, trifolium, and vetches have either partially or entirely failed. It is now that lucerne shows its value and claims the home farmer's notice, for we began cutting a good crop for the horses on the 26th of April last. The green fodder crops may still be sown, such as trifolium, tall rape, and vetches, to come in probably at the time most required as cattle food to supplement the pastures if we get a dry harsh season—viz., about the end of July or early in August. Fat sheep and fat lambs are very dear, and will pay well for liberal feeding with cake and cracked beans; and this is also a wool question as well as meat, for a good meat carcass always furnishes the most wool, and now it is so much dearer it must be regarded as an important factor in sheep-feeding. Dairy cows are doing better than they did last year, because the grass although not over-plentiful in many pastures still it is healthy and proofy. We know a farmer of 400 acres who is now cutting border grass under and near the hedges, with which he feeds twenty dairy cows without other green food, giving, however, 4 lbs. of cotton cake per day to each animal. This was always our own custom until we grubbed all the inside fences, and it answers to cut the borders twice a year, as it utilises all the weeds.

PERMANENT PASTURES, THEIR FORMATION AND MANAGEMENT.

A PAPER on this subject, prepared by James Carter & Co. at the request of the members of the Framlingham Farmers' Club, before whom it was read on the 19th ult., has been issued in pamphlet form. It contains sound and practical information imparted in a clear plain manner. After alluding to the risk attendant on the cultivation of corn, it is stated that "another advantage of good pasturage is, that we can grow more meat; and depend upon it that good English meat will always fetch a good price. Australia and America have sent us large quantities of meat, but still the price of English meat is as high as ever it was, and who is there that does not prefer it? So that we think the farmer need fear nothing on this score. America may grow corn better and cheaper than we can, but she cannot, at present at any rate, give us such good meat as we can produce ourselves."

Passing the remarks on the importance of draining and land preparation, the question is discussed as to whether grass seeds should be sown with a corn crop or not.

"The advantages put forward as pertaining to the practice of sowing with a crop, are that the corn is a protection to the young grass, and that it will repay a part of the expense of putting in the grass seeds. With regard to the shelter afforded to the young grass by the corn, there may be little in it, but if the grass seed is sown in March or April, we think there will not be much need of shelter; and as to the idea that the corn will repay a part of the expense, how often have we heard the remark during the last few years that corn does not pay, and yet we are to take a crop of corn which does not pay from the land we have prepared for the grass, which does pay. One of the essential points in laying land down to grass is that it should be in good heart, and yet, having put the grass down in good condition, the first thing we do is to begin to take the heart out of it again with a corn crop. This seems against all reason, and the argument is strengthened by the fact that corn and grass, belonging to the same natural order and being similar in composition, extract the same substance in the shape of plant food, so that no crop is better adapted to rob the grass than a corn crop."

Thick sowing is advocated and "a well-constituted mixture for permanent pasture should contain many varieties of grasses and clovers, for several reasons. We find some varieties will thrive best in one season, others in another season. Some varieties extract from the soil plant food which would not be utilised by other varieties. Some mature earlier than others, and stocks of all kinds do better on a mixture of foods than when fed continually upon the same thing. So that a well-mixed pasture has the advantage of being earlier, lasting longer, and giving a heavier and better feed than one composed entirely of a few or a single variety of grass. With regard to the time of sowing, August has been suggested by some as the best time for sowing grass seeds, but our experience is that March and April are generally the best months. But as we do not always get the same sort of weather in one particular month every year, we cannot lay down a fixed rule, but everyone must use his own judgment, remembering that a dry time for seeding, followed by moist warm weather, if we can manage to arrange our work so exactly, is sure to be followed by the best results. If, however, it is thought expedient to sow in August, it should be remembered that slugs and frost may probably destroy part of the clovers, so that it will be well to examine the pastures in the spring, and if necessary sow more clover seed. We know it is a common practice to sweep the hay

loft of everything it contains, including dust and chaff, and even then these, the seeds of many weeds and inferior grasses. This is looked upon as a sort of home-made renovating mixture, and without even being put through the winnowing machine is sown upon bare places in the vain hope that they will produce herbage similar to the rest of the field. But it would certainly be wiser policy to pay twice over for good seed than use so-called 'hay seeds.'"

The manner of sowing, "inoculation," and renovating grass lands are described, also the after management of grass and manuring.

"Some suggest mowing the grass the first year, allowing it to seed to ripen before doing so; the seed will then shed in rag making, and so increase the closeness of the turf. Now, at first sight this seems a reasonable plan and one worth following, but on further consideration we think it might be improved upon: for if the ground has not been seeded thickly enough this defect ought to have been remedied before hay time. The first year we should cut early before any of the grasses are in flower, and afterwards roll repeatedly. By cutting early you check weeds from encouraging the grass to tiller. It may in all probability stand a second cutting, and after this unless it gets very luxuriant we should prefer leaving it alone till spring; if, however, the growth is very strong a few young cattle may be turned in. By all means keep sheep out of the pasture. We have heard a good deal about the golden tread of the sheep, but we must remember that it depends altogether where it treads as to whether the tread is golden or otherwise. Good pastures on which oxen are fed are injured by sheep, which reject the coarser grasses and pick out the finest, but a few horses turned into them in autumn or winter help to consume the coarser tufts."

"With regard to manuring, we would suggest that various kinds should be used in order to keep a good mixed herbage, for it is found if ammoniacal manures be exclusively used the grasses will thrive to the exclusion of the clovers; whereas, if phosphates, lime, &c., be used alone, the clovers will thrive to the exclusion of the grasses. The best artificial manures are guano, which is rich in phosphates and nitrogen; and, in moderation, nitrate of soda and sulphate of ammonia, which are rich in nitrogen. Guano may be applied at the rate of 1½ to 2 cwt. per acre. A good mixture is made with three parts guano, one part nitrate of soda, and one of sulphate of ammonia. Of this mixture 2 cwt. to 2½ cwt. per acre may be used. February is the best time as a rule to sow this."

The above brief extracts indicate the useful character of the pamphlet, which contains many other practical hints relative to the subject that each year appears to be growing in importance.

CHEMISTRY AS APPLIED TO AGRICULTURE

MR. J. MACDONALD CAMERON, of the Metropolitan School of Agricultural Chemistry, 52, Lime Street, London, has published his lecture that he delivered at the Tunbridge Wells Farmers' Club, in February last, in pamphlet form. It is dedicated to Sir Francis Geary, Bart. of Oxon Hoath, and shows the importance of a knowledge of chemistry for the most profitable management of various crops, the manures for which being founded on the constituents of the crops to be grown, and the substances already in the soil as determined by analysis. The subject, which is unquestionably of great importance, is ably treated, and a Committee has been formed, and a hop garden placed at the author's disposal, for carrying out the plan he advocates, and also for testing the value of the Aberdeenshire experiments relative to the comparative values of soluble phosphate from bones and bone ash with that from coprolite and other mineral phosphates as a manure for turnips. The result of these experiments was that insoluble phosphate in bone meal, and in flour from digested bones, produced larger crops than were produced by any other form of phosphate. The pamphlet is well worthy of perusal by agriculturists, and we cite the following with reference to lime as a manure:—

"A glance at the table of plant analyses shows that lime is extracted in considerable quantities by the several kinds of crop which we find it necessary to cultivate, and hence it is not only essential that it should be present, but it must be so in sufficient quantity. Further, its chemical influence on the soil—its action upon the clayey constituents, liberating for the use of the plant their alkaline substances—potash and soda, and the rapidity with which it causes the decay of the vegetable matter present in the soil, converting its nitrogen into ammonia and nitric acid, and neutralising the acid substances produced during such decay, as well as its mechanical influence in rendering the soil loose and friable, places it in the first rank of manures. But like the proverbial sending of coals to Newcastle, its influence cannot be made apparent when applied to land in which it is already present in sufficient quantity, nor can we expect maximum results from it when applied to soils deficient in those constituents upon which it exercises a special action—clay and organic matter. In the application of this manure, as well as others, the husbandman must be guided entirely by the condition of his soil and the requirements of the plants he proposes to raise upon it."

ARRANGEMENT OF POULTRY SHOWS.

WE announce elsewhere that the Council of the British Dairy Farmers' Association have offered to the Poultry Club the entire management of the poultry show to be held the last week in October in connection with the Dairy Show. It remains to be seen whether the Committee of the Club consider it in a position to undertake so great a responsibility; we believe that they do, and that the general body of the members are most anxious to have a show managed on the principles of the Club. We are not, however, at present concerned with the management of this or any other show, but with the arrangement of their dates. The Dairy Show is this year to be held within a week, so that birds will not be kept there over a Sunday; this is a great improvement, but unfortunately the same week is chosen by both the Oxford Committee and the Council of the Dairy Show. These are both thoroughly established and important Shows, and serve much the same purpose—viz., to bring out the earlier chicken produce of the year. The Oxford Show has long been well managed, and rose almost directly after its establishment into fame and popularity. The Dairy Show has not had so continuous an existence, from its management having been in various hands, but it has always held a high place, and from its position the vast accommodation of the Agricultural Hall might hold the highest place among poultry shows. We earnestly hope, therefore, that some arrangement may be made to prevent the closing of two such important exhibitions. We have never been in favour of great multiplication of open shows, and for this reason are specially anxious that the largest and best managed of them should be judiciously arranged as to date. It is not for us to point out exactly how the present difficulty should be overcome. If our memory fails not the Oxford Show has generally been held during the last week in October, while the time of that at Islington has varied a week or two. The natural suggestion then would be that the latter should change its time; this would probably, however, be impossible in the case of so vast a national affair, the date of which has doubtless been fixed in accordance with the convenience of the patrons of its first and its greatest feature—viz., the exhibition of every kind of dairy produce. There are two other shows connected with it—those of goats, bees, &c., which have already been arranged for the stated time. If, then, two grand poultry shows are not both to suffer, we can only hope that the managers of the Oxford one may be able, and see their way to changing its date. It is a pity that the promoters of all such meetings should not make their dates a primary consideration. Let those who have not as yet made fixtures consult together to prevent the recurrence of such difficulties.

CHANGE OF COLOUR IN EGGS.

WILL the colour of the male bird in any degree affect this? The reason I ask this question is as follows:—In a small yard here are half a dozen crossbred hens having something of a Brahma or Coochin strain, as their eggs were of a light brown colour. A few weeks since a small white cockerel was placed in the yard, and before he had been there a fortnight the eggs produced were perfectly white. On the removal of the male bird the eggs have gradually again resumed their brown or normal colour. The male bird alluded to was a Japanese Silky.—P. G.

VARIETIES.

THE Exhibition of Poultry and Pigeons of the Royal Cornwall Agricultural Society will be held on June 18th and 17th at Lostwithiel. The classification is good and the prizes fair. Entries close on the 26th inst., and the Secretary is Mr. W. Pease, jun.

THE POULTRY CLUB.—Mr. O. E. Cresswell wishes us to inform the members of the Club that he will be absent from England a few weeks, during which time any communications requiring the immediate attention of the Club may, by his kind permission, be addressed to T. C. Burnell, Esq., West Stratton, Micheldever Station, Hants. Copies of the Club's rules and lists of members may be obtained from Mr. A. Jacob, 14, Lower Belgrave Street, Eaton Square, London, S.W.

STAFFORDSHIRE AGRICULTURAL SOCIETY.—The Exhibition of stock, implements, and poultry will be held at Stoke-on-Trent on September 22nd and 23rd. Entries for stock and implements close August 21st, for poultry on September 4th. Mr. W. Tomkinson, Newcastle, Staffordshire is the Secretary of the Society.

BRITISH DAIRY FARMERS' ASSOCIATION.—We understand that the Council of this Association have invited the Poultry Club to take the entire management of the poultry show to be held in connection with the dairy show on October 26th and following days.

AGRICULTURAL EXPERIENCE.—An elaborate paper was read on this subject before the Society of Arts on the 4th inst by Mr. J. C. Morton, a gentleman especially competent to prepare a record of the agriculture of this country during a period of

forty years. The subject was elucidated by carefully prepared diagrams of the composition of soils, character and duration of harvests, price of grain, amount of rainfall, with the receipts and value of different farms during the period mentioned. After showing that, notwithstanding periods of great depression and much loss, British agriculture has continued to make steady progress, and those who have passed through the "bad times" of the past have generally had a reward, the lecturer made various suggestions for the more certain and profitable culture of the land in future, the principal one being the granting of liberty in cropping, so as to better meet the increasing difficulties of foreign competition.

— AGRICULTURE IN SOUTHERN INDIA.—On Friday evening last Mr. W. Robertson, Superintendent of the Government Farms in the Madras Presidency, gave a lecture at the Society of Arts on the subject of the present condition and prospects of agriculture in South India. Mr. Robertson described the soils, crops, rainfall, &c., of the Madras Presidency, and stated that it was the uncertainty and not the deficiency of the rainfall that was complained of. The mean daily temperature in the shade varied from 75° to 90° in the year. In the sun the thermometer would sometimes register from 150° to 160°. On the hill plateaux, at elevations over 6000 feet, the average temperature was about 30° lower than on the plains. During the last twenty-five years fully 8,000,000 acres of land partially covered by scrub jungle had been cleared and brought under the plough, and this process had caused the rain water to run off the land with greater rapidity. The lecturer described the shallow tillage and rude implements of Southern India, the crops, manuring, &c., and pointed out that by the waste of natural manures and the export of bones, &c., the soil was much deteriorated. The cropping was of an exhaustive character. On the subject of irrigation the lecturer said the ryot wasted the water of the tanks and dams, but made a proper use of the water which he raised from wells. In the establishment of irrigation works enough attention was not paid to agricultural as contrasted with engineering considerations.

COTTAGE BEE-KEEPING.—No. 6.

I WRITE as a counsellor to cottage bee-keepers with the sort of feeling that a general who has survived a disastrous battle would be likely to entertain in addressing his few remaining soldiers. Where are the cottage bee-keepers? The cottagers, indeed, are there, but not the bee-keepers. Even the few who had any bees alive a month ago for miles around me have lost their all since the late cutting east winds set in. There doubtless are some favoured spots which are sheltered enough to allow of the bees going forth in the bright sunshine, and returning again in safety at the close of their foraging expedition. Not so here in the open plains, or on the exposed hillsides of Mid-Somerset. Even my own bees have made but little progress either in population or honey-gathering, and swarming is still a remote contingency on this 7th of May.

Nevertheless we must hope on and act as if better days were in store; so I resume the subject of my former papers. But it seems fitting here to remind those who are fortunate enough to possess hives of living bees, that it is possible to help both stocks and swarms so as to make the most of any times of prosperity which may be in the future, even of the current year. The cottager can do this if he chooses to take a little trouble and can afford to go to a little expense. It is quite worth while to lay out a few shillings in sugar and to feed his bees, if he has reason to believe that they are in want of food; and especially the swarms if hard weather should set in soon after they have been hived. It is difficult to do this where the common lipper is used, hence one of the great advantages of flat-topped hives with a hole in the crown, such as I recommended for use at page 53, and covered over with a smaller hive. A very simple mode of feeding is by means of a piece of empty honeycomb—stout drone comb is the best—laid flat upon the hive top just over the hole. I always keep some of this comb for the purpose, as I use every variety of method in feeding my bees. The larger and flatter the comb and the deeper the cells the better for the purpose. A small hole may be made in it with advantage just over the top hole of the hive, so as to make it easy for the bees to pass up and down. Into the cells of this comb every evening when foraging bees are at rest the sugar syrup may be poured. It can be done by a careful hand so neatly that almost every cell may be filled without any spilling or running over, and this way from 1 lb. to 1½ lb. of syrup can be given at one time. Care must be taken that the covering hive fits so closely that no robber bees can creep in. If necessary a suitably sized bag or cap of some coarse material could be made to fit over all and be tied round the hive. I could give many other ways of feeding bees, but not one is simpler or more efficacious than this. Another plan is to put a bit of perforated zinc over the hole and insert upon it an empty pickle jar with a wide mouth full of syrup. Tie it up first with a bit of lino, then insert the jar in the palm of the left hand and transfer it to the perforated zinc. Cover over carefully as before, after

seeing that the jar or bottle cannot tip over. Bees will take down from 5 to 8 lbs. of food a day by this means.

This feeding should certainly be adopted this year with all swarms to give them a good start. Sometimes, as last year, swarms will actually decrease in numbers and dwindle away, making hardly any comb and not breeding at all; whereas if they had only been helped in the bad weather the bees would have built so much more comb and so increased in numbers, that when the chance came for honey-gathering their progress would have been great in proportion. Of course it is not necessary or advisable to feed swarms except in bad weather, or in a year like the present when the bees are weak. It is always good to let well alone.

When once the apiary is fully established the next care that comes after swarming is the honey harvest. In view of this it is often advisable to give additional room at the top of the hive, and sometimes even below the hive when the season happens to be exceptionally good. The bees will often fill a cap or super of beautiful honeycomb before they swarm. Therefore be on the look-out, and when the season is good, the weather fine, and the bees show signs of want of room by hanging ever so little outside the hive entrance, lose no time. Open the hole at top and let them into the super. You must cover this well over, so as both to keep in the warmth and to protect them from a too hot sun as from wet. If their numbers still increase and they hang out again before swarming, they must have yet more room given to them; for bees should never be allowed to remain idle, many pounds of honey are often lost to the bee-keeper in this way. This additional room can be given underneath the hive by inverting a common hive more or less large under the floorboard. To this end there must be a hole about 2 inches across somewhat near the entrance in the board itself, by which the bees can go down, which they will certainly do rather than hang outside in the open air. A little care and ingenuity will be required to arrange this under hive so that it may fit close to the floorboard. It will also be necessary to provide some sort of box or pan on which the floorboard of the hive can rest. I find sealake pots make a capital foundation for the hives to rest upon in summer time. I turn them over with the broad rim uppermost, and dig out a little nest in the ground into which the shoulder of the pot rests; and to make it still firmer the earth is thrown in and rammed down in the pot. As of course the earth inside is perfectly dry, it is evident that a straw hive can be very easily and safely arranged inside the pot in such a manner as to make it fit easily to the hive board underneath. Here you have everything that is necessary for the fullest space being given to the bees in which to breed and store up honey. Of course there are many other contrivances of a like nature which may answer as well or better than this sealake pot arrangement, but something of this sort is wanted for the really profitable management of bees on the cottagers' plan. It is not enough to depend only on the super.

When the swarm has left the hive it is advisable at once to take off the super, whether it is quite full or not. Those combs in it that are sealed up for the most part can be taken out and stored away; the half filled and smaller combs (with what brood is found there) should be left in the super and given to some other hive which needs additional space. The same may be said of the under hive. It is well also once a week, or sometimes oftener, to examine the supers. If quite full they may be taken away and replaced by others that are empty. At the end of the season a bit of slate can be put over the hole in the floorboard when the under hive is removed.

It may happen at such times that royal cells sealed up, and possibly the queen herself, may be found in the super. If so, here is an opportunity of making a swarm artificially which every clever bee-keeper should know how to do. This, and one or two other interesting matters, may be explained hereafter.—B. & W.

OUR LETTER BOX.

CHICKENS DYING (C. S. P.).—The cold variable weather causes the diarrhoea. Keep them under cover, and let them out only in the middle of the day, and in fine weather. Give them barley meal or bread mashed with ale.

PHEASANT FOWLS (R. Bowen).—They are quite distinct from Silver-spangled Hamburgs, being the result of a cross between a Game Bantam cock and a Gold-spangled Hamburg hen. Silver-spangled Hamburgs are good and prolific layers—are, indeed, both useful and ornamental birds, worthy of being more kept than they are.

COLOUR OF GOLDEN-SPANGLED HAMBURGH COCK (O. R.).—The male bird should have rich chestnut plumage, the hackle and saddle clouded with black, the tail black, and the breast brown and black splashed. The deaf ear should be faultlessly white, and the comb well spiked, with a pike behind. It should not overhang the eyes or nostrils, and it should be firmly fixed on the head.

GOLDFINCH AND CANARY MULE BREEDING (Ingwer).—Do not be discouraged by finding four unfertile eggs. If as you state, the Goldfinch appears very fresh and sings, it is a good sign. The weather is unfavourable at present. There is no dependence upon the Goldfinch. He inserts his beak into one or all of the eggs, and although he may to you appear harmless so far as meddling with the eggs, such is the fussy nature of finches that they

will often jump into the nests when the hens leave and puncture them with their very sharp claws.

EGG-BOUND CANARIES (H. A. Worcester).—During north or north-west winds, such as we are still experiencing, brooding hens often seem to be egg-bound, and you have sometimes a loss similar to what breeders—namely, losing just before the early part of the hatching season. Perhaps Mackley Brothers of Norwich might supply you with Do not adopt artificial heat, for your birds will fall into a pneumonia. Had your Canaries been kept in a cold room during the winter, with no water for bathing in, they would have done better. The best method an egg-bound hen is to apply a drop of oil to the vent, and in a few days after hold the lower portion of the hen in a warm bath, or over a jug arising from water in a narrow-necked jug. After five minutes of treatment place the hen upon some flannel or wadding in a cage at a short distance from the fire, when most likely she will lay her egg. Once covered remove her to her cage, and give a little bread and milk. These hens should be plentifully supplied with chandelion or other green food.

BEE BOOKS (W. H. N.).—You will be much interested in Huber's book on bees, which you may often purchase cheap at any good second-hand stall. Also you will find "Bevan on the Honey Bee" published by the same master. If you can, obtain one of the older copies published before Mann's edition. Those contain the entire matter of the original work without the doubtful improvements of the later edition. It contains an amount of valuable information about all the things that you know except, perhaps, foul brood, which is a bacterial disease, devastating to our apiaries, but fortunately not a single instance has occurred in our apiary during our forty-five years' experience of bee-keeping. Perhaps will be time enough to get up the subject when the plague has hit among your own or your neighbours' bees. We shall be happy to send any terms or other matters connected with bee-keeping. "The Apian by Alfred Neighbour, is also an excellent work and readily obtainable.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51°23'40" N.; Long. 0°8'0" W.; Altitude, 111 feet.

DATE.	9 A.M.		IN THE DAY.							
			Hygrometer.		Direction of Wind.	Temp. of Air at 1 foot.	Shade Temperature.		Radiation Temperature.	
	Barom. at sea level.	Therm. at sea level.	Dry.	Wet.			Max.	Min.	In sun.	On grass.
1890.										
May.										
Sun. 2	29.928	45.3	45.3	N.E.	45.3	63.3	53.3	113.3	53.3	53.3
Mon. 3	29.727	44.9	44.9	N.E.	44.9	62.2	52.2	109.9	52.2	52.2
Tu. 4	29.984	43.9	43.9	N.E.	43.9	57.7	44.2	118.5	44.2	44.2
We. 5	30.050	43.5	43.5	N.	43.5	55.0	41.9	114.5	41.9	41.9
Th. 6	30.057	42.5	42.5	N.	42.5	61.6	43.6	114.3	43.6	43.6
Fri. 7	30.156	43.0	43.0	N.	43.0	59.0	39.6	111.3	39.6	39.6
Sat. 8	30.157	44.1	44.1	N.	44.1	60.5	40.1	117.1	40.1	40.1
Means.	29.960	44.0	44.3		44.4	60.0	46.3	105.3	46.3	46.3

REMARKS.

2nd.—Very fine, bright, calm day.
3rd.—Very dull first part of morning; fine with sunshine in middle of day; overcast at 3 P.M.; thunder at 3.35 P.M. to 3.45 P.M., fine evening.
4th.—Dull at times but generally fine and bright, with cold wind.
5th.—Cold very dull day, slight rain.
6th.—Cloudy morning, afternoon very bright and fine.
7th.—Bright morning, overcast at intervals during the day, cold wind.
8th.—Dull in early morning, fine day with bright sunshine; overcast between 4 and 5 P.M. with dark heavy-looking clouds; clear fine evening.
Temperature slightly warmer than in the previous week, but still a bit below the average. Dry north-easterly wind nearly all the week.—G. SYMONS.

COVENT GARDEN MARKET.—MAY 12.

A LITTLE more activity has shown itself the last day or two, but all good supply prices have not improved.

FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples.....	1/2	4/0	Nectarines	1/2	0/0
Apricots.....	1/2	0/0	Oranges	1/2	0/0
Cherries.....	1/2	0/0	Mustard & Cress punnet	1/2	0/0
Chestnuts.....	1/2	0/0	Onions	1/2	0/0
Figs.....	1/2	0/0	Pears, kitchen	1/2	0/0
Filberts.....	1/2	0/0	Pears, dessert	1/2	0/0
Cobs.....	1/2	0/0	Pine Apples	1/2	0/0
Gooseberries.....	1/2	0/0	Plums	1/2	0/0
Grapes, hothouse	1/2	0/0	Raspberries	1/2	0/0
Lemons.....	1/2	0/0	Strawberries.....	1/2	0/0
Melons.....	1/2	0/0	Walnuts	1/2	0/0
			ditto	1/2	0/0

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Artichokes.....	1/2	0/0	Mushrooms	1/2	0/0
Banana.....	1/2	0/0	Mustard & Cress punnet	1/2	0/0
Beans, kidney	1/2	0/0	Onions	1/2	0/0
Beet, Red.....	1/2	0/0	Pickling	1/2	0/0
Broccoli.....	1/2	0/0	Parley..... doz. bunches	1/2	0/0
Brussels Sprouts	1/2	0/0	Parasnis..... dozen	1/2	0/0
Cabbage.....	1/2	0/0	Peas	1/2	0/0
Carrots.....	1/2	0/0	Potatoes..... bushel	1/2	0/0
Cauliflower.....	1/2	0/0	Radishes..... bushel	1/2	0/0
Celery.....	1/2	0/0	Radishes, doz. bunches	1/2	0/0
Coleworts..... doz. bunches	1/2	0/0	Rhubarb..... bundle	1/2	0/0
Cucumbers..... each	1/2	0/0	Salsify..... bundle	1/2	0/0
Endive..... dozen	1/2	0/0	Scorzonera..... bundle	1/2	0/0
Fennel..... bunch	1/2	0/0	Seakale..... basket	1/2	0/0
Garlic..... lb.	1/2	0/0	Shallots..... lb.	1/2	0/0
Herbs..... bunch	1/2	0/0	Spinach..... bushel	1/2	0/0
Leeks..... bunch	1/2	0/0	Turnips..... bunch	1/2	0/0
			Vegetable Marrows each	1/2	0/0

WEEKLY CALENDAR.

Day of Week	MAY 20—26, 1880.	Average Temperature near London.			Sun Rises.	Sun Sets.	Moon Rises.	Moon Sets.	Moon's Age.	Clock after Sun.	Day of Year.
		Day.	Night.	Mean.							
TH	Reading Horticultural Exhibition.	67.0	45.5	56.3	4 2	7 50	3 19	1 36	11	3 29	141
F		67.2	44.7	56.0	4 1	7 52	4 43	1 55	12	3 35	142
S	Royal Botanic Society at 3.45 P.M.	65.4	42.3	53.8	4 0	7 53	6 10	2 19	13	3 31	143
SUN	TRINITY SUNDAY.	65.4	42.3	53.8	3 59	7 54	7 30	2 49	14	3 26	144
M	[Institutes at 11 A.M.; Conversazione at Kensington.	67.5	42.9	55.2	3 58	7 55	8 54	3 31	15	3 21	145
TU	Royal Horticultural Society—Fruit and Floral Com-	66.3	43.0	54.7	3 57	7 57	9 53	4 28	16	3 15	146
W	Society of Arts at 8 P.M.	67.4	43.0	55.2	3 55	7 58	10 46	5 39	17	3 9	147

From observations taken near London during forty-three years, the average day temperature of the week is 67.0°; and its night temperature 43.3°.

SWEET-SCENTED FLOWERS.

"O come with me where Violets bloom,
And scent the air with sweet perfume;
And where like diamonds to the sight
Dewdrops sparkle bright."

SUCH, almost literally, was the invitation given to two "bonnie girls" in early morning lately, and whose prompt and ready acquiescence led to the suggestion that we should see how many different kinds of sweet-scented flowers we could find in a stroll round the garden, and try by comparison to discover the best. My own selection of *Lonicera flexuosa* was made and told about to the readers of the Journal long ago, yet it cannot be too often commended to those who require a fast-growing, sweet-scented, hardy climber to blossom in summer. Mine is a huge plant, covering an area of 200 to 300 square feet; and running above it and over a Wistaria, one of the sweetest flowers of spring, and lovely with its thickly-clustering pendent racemes. With these two, plant the white Jasmine, and you have a "of the sweetest flowers that blow" on your walls, leading their flowers in succession through spring, summer, and autumn.

We first went through the glass houses, and at the outset upon several plants of Mignonette in full bloom, so great that amid exclamations of approval from my young friends I said, "We shall find nothing better than this old favourite, yet let us take a bit of it with us to compare with others." I may note in passing that these plants were not seedlings, but were raised from cuttings, which I much prefer for pot culture. Each cutting is placed singly in gritty soil in a small pot to avoid that laceration of the roots which always occurs when several are inserted in a large pot. In the moist, brisk, genial temperature of a hotbed they make roots and branches quickly, are then removed to a cooler temperature, are repotted as often as may be necessary, and may be brought to a large size and in full bloom in much less time than is possible with seedlings. Only be sure and remember to drain the pots thoroughly, to use very rich gritty soil, to well ram it down around the ball with a stick at each repotting, to give clear liquid manure abundantly, and to syringe often with clear water. The cuttings often show a tendency to blossom prematurely as soon as growth begins, but nipping off the flower buds once or twice and generous treatment soon induces vigorous growth.

In the next house were Roses in pots, vigorous plants from cuttings taken in the autumn of 1878, and rooted without heat in a cold frame during the following winter very slowly, but in other respects just like *Calceolaria* cuttings. They were in full bloom, and evidently had sweet-scented blossoms among them. Is it Marie Van Houtte that fills the air with fragrance? No, she is very lovely but almost scentless. Isabella Sprunt? No. Souvenir de Paul Neyron? No. Melanie Willermoz? No. It is the blushing Goubault, sweetest of all Tea-scented Roses, but

not by any means to be regarded as a rival of Mignonette. When we came to a *Boronia megastigma* it was much more difficult to come to a decision, for the delicious fragrance of its flowers more than atones for their insignificant form and dull colour. It is of easy culture, answering well in a greenhouse or conservatory. Much heat or being crowded by other plants is its ruin. Give it an open airy shelf under glass, and in summer an equally open position near a north wall in the open air, and it will thrive apace. A fine flower of that wonderful Carnation Souvenir de la Malmaison gave us our next variety in its pleasant but not powerful Clove-like scent; but when we came to the stove one of my young friends declared that the *Stephanotis* was the sweetest of all; nor did the delicious perfume of a large Orange tree in full bloom in another house induce her to alter her decision, yet her companion chose the Orange blossom with a smile, and the observation that no flower was equal to it in her estimation either for fragrance or purity, and I have no doubt most young ladies will agree with her.

The *Stephanotis* is planted in a mound of loam enriched with a plentiful admixture of old hotbed manure, in which soil it thrives so well that it has to be pruned frequently to keep it within due bounds. It is trained close under the glass, and its cut flowers are valued for all decorative purposes. Nothing can be more chaste upon a dinner table than a mixture of them with sprays of *Lycopodium* in transparent glasses. I planted near it at the same time and in similar soil a *Thunbergia Harrisii* and a *Passiflora princeps*. All grew well, but both of them have gradually been cut away to make room for the *Stephanotis*. I mention them here because I regard them as our three best stove climbers. Nothing can be more charming than the huge racemes of pale blue flowers with which the *Thunbergia* is laden in winter, but they must be seen upon the plant, for once cut they only last an hour or two. Musk of the old and new type, various scented-leaved *Geraniums* and *Aloysias*, all gained a meed of praise, and our survey of tender plants was brought to a pleasing conclusion by the scent of a *Cytisus Atleeanus* some 5 feet high, one mass of its rich yellow flowers loading the surrounding air with its sweetness. This plant has only the protection of an unheated house in winter after being subjected to several degrees of frost without harm.

In the open gardens the Wallflowers were so fragrant that a few of the old double blue Violet still in bloom near them gained little notice. Violets reign supreme in winter and early spring, a fresh supply of some thousands being raised from offsets and seed annually at this season of the year, many to blossom in winter under glass, and many more to be planted in every snug nook and corner available out of doors. *Daphne Cneorum* was very gay with fragrant pink flowers, and was liked much better than the greenish-yellow-flowered *D. pontica*, yet both are favourites of mine. The former only answers really well in pure peat, but the latter forms huge spreading bushes from 1 to 2 yards in diameter in ordinary soil, and is very sweet after a shower. The Mountain Ash flowers were just opening; there are thousands of them growing wild in the woods here, and the flowers are very sweet-scented. Lilacs, White Thorn, Sweet Briar,

Cabbage Roses, and white Pinks all have a place, and are to be regarded as indispensable adjuncts to every garden. We should cherish these sterling old favourites as much for their intrinsic worth as for "auld lang syne." None of them are difficult to manage, and a little care suffices to keep them flourishing. I must not omit mention of *Aponogeton distachyon* now in full bloom with such sweet-scented flowers that it has gained the popular name of Water Hawthorn.—EDWARD LUCKHURST.

WINTER AND SPRING VEGETABLES.

INFORMATION respecting the above being desired, I may say that in north Yorkshire, on strong soil inclining to clay, partially drained, and in a somewhat sheltered situation where during the past winter we registered 2° of frost below zero, our plants of Brussels Sprouts did not attain to their usual size, but most of them stood through the winter and were useful in early spring. About half the plants of Dwarf Ulm Savoy were unhurt, and those cut before the frost came gave a supply of sprouts. Little Pixie Cabbage sown in the spring nearly all perished. About half the plants of Couve Tronchuda or Portugal Cabbage were killed by the frost. This I consider is one of the most useful of winter greens; it, however, requires care in the seed bed, is rather shy in coming up, and if not protected against the frosts we find ourselves disappointed of a crop. Dwarf Curled Kale lived through the winter, and is still affording a good supply of side shoots. Purple Branching or Sprouting Broccoli I find to be one of the hardiest of the Brassicas, and one of the most esteemed vegetables we have in winter and spring. From October to May when well grown and cooked it is the nearest approach to Asparagus of any vegetable I know. Our late Walcheren, Veitch's Autumn Giant, and Snow's Winter all perished during the frost. We lost very few Broccolis from the frost, but, owing to the unfavourable summer we had, the plants were small and are proving very useful at the present time. Elliotson's Mammoth is doing us good service though the heads are small. A well-selected strain of Dwarf Russian Broccoli is just coming in now; all the plants have stood though they are in an east aspect. I attribute their protection to their dwarf habit and their being covered with snow. They are very acceptable at the present time, and will be succeeded by a well-selected stock of Knight's Protecting Broccoli, which have nearly all lived through the winter: they, too, are in an east aspect. Last but not least of useful winter vegetables with me is Silver or Seakale Beet; this also has survived, and is affording us a good supply as a substitute for Spinach. It is growing on a north border, and will give us a supply for a long time to come.—NORTH YORK.

MAKING THE MOST OF A GARDEN.

IN small gardens it is a matter of great consequence to make the most of every nook and corner, so that no possible room may be lost, but advantage taken of every place in which a plant can be grown; and even in larger gardens it is well to have all corners occupied which are not in the flower garden, for very often a plant looks better and attracts more attention when we come upon it unexpectedly than if it is located in some formal parterre. The finest example of this gardening with which I am acquainted is at Lamorran, where the Hon. and Rev. J. T. Boscawen has dotted about an immense variety of plants on the grassy hillside above his house. He has, moreover, contrived a deep cutting about 7 feet deep and just wide enough for one person to walk through it, and the sides of this "adit," as it would be called in Cornwall, are clothed with various treasures which are too tender to bear full exposure to the weather. A cutting of that kind can of course be easily protected from the effects of frost or snow. But few gardens are adapted to such an elaborate way of making the most of things as this. It is, however, a common circumstance to have a large forest tree "whose antique root peeps out" upon the lawn or by the gravel path which runs around the small domain. If so, there is no better place to plant some of the small and interesting specimens of those plants which cannot so well be placed in beds. Take, for instance, the hardy *Cypripedium*: the shady side of the root will suit them admirably, and they will nestle comfortably between the gnarled wood if a little peat is placed for their especial behoof. On the sunny side plant *Cyclamen hederifolium*, which will luxuriate there and give you flowers in autumn and a glorious crown of leaves all

through the winter. The foliage of this plant is really most striking, and its hardy nature makes it a great favourite with me. Its corms grow by degrees to be as large as saucers, and it is most readily propagated by seed. There are two distinct colours—the more common the usual *Cyclamen* red, the other a clear beautiful white. If you are living in the sunny south other kinds of *Cyclamen* will grow readily; but *C. persicum* will only do in the most favoured localities, and even there is liable to destruction without protection. It is essentially a greenhouse species.

Then a little further from the shelter of the root have a small group of the beautiful *Fritillary* (*F. meleagris*). This plant grows wild in damp meadows when the soil is rich and heavy. It will grow well in grass, and a group of it in flower in April forms a lovely object for those who can appreciate beauty of outline without richness of colouring. The large bells are quaint-looking; "Snake's-heads," the boys call them where they grow wild. There is a white variety, not so common as the purple, but generally found mixed with it in the meadows. It is perhaps scarcely so pretty and not quite so early as the purple form. Another plant which is well adapted for such a place is the blue *Squill* (*Scilla sibirica*). This comes so early that it is quite gone before the *Fritillary* begins to show itself. It lasts but a short time certainly, but this very fact enhances its beauty in my opinion. It comes up suddenly in February, soon flowers, and in a few weeks is lost sight of altogether; but its lovely dark blue flowers are delightful to behold at such an early season, and they seem to be perfectly hardy. After being once planted they need little attention, and if slugs are troublesome about the flowers the best protection is to sprinkle a little guano all round them.

I do not recommend *Snowdrops* for such a place as this. They are very beautiful while in flower, but afterwards their long pale green leaves are decidedly objectionable and take up too much room. The best way to have plenty of them in a small place without being too much annoyed by the after leaves is to plant them quite close to the house wall. They will grow well there, and their leaves will probably not be too conspicuous. *Crocuses* may well be grown in the same way, and once planted in good ground they will go on for several years without any further trouble, though the more beautiful purple and white varieties may gradually decrease and leave the space free to their bolder and more pushing yellow sisters. Anyone can grow *Snowdrops* and *Crocuses* in this way, for even if there is no border round the house, but a path only, they can still be planted in the gravel without much trouble and with no injury to the neatness of the walk.

But to return to the tree. Another plant which will grow well there, and which is not worth cultivating in a border, is the interesting and old-fashioned *Grape Hyacinth*. This plant has no beauty in its mode of growth, but its scent is delicious, and it is such an old acquaintance with most of us that we are glad to find it a corner where it can be happy and unmolested by more fashionable and more brilliant companions. The same plant is sometimes called the *Plum Hyacinth* or the *Starch Hyacinth*. Another plant, called the *Feathered Hyacinth*, is much more beautiful, and would probably do also in a similar place. A very favourite spring flower, perhaps the earliest of all—the little low-growing *Winter Aconite*, will not, according to my experience, adapt itself to life in the grass. It seems to require a loose open leaf soil, and unless it grows well there is no beauty in it. Moreover, it is so small that it requires massing. I do not mean to disparage this little lowly flower of spring, for it is a great favourite, but everything should have its right place, and *Winter Aconites* must find some more suitable locality than the grassy knoll under our forest tree.

In this little grass garden one thing is specially requisite that it should not have too much of the garden about it. It must not look cultivated, but wild; hence it is important that the different plants round the root should not flower too much together. It is better if possible that one should succeed another, so that the interest may be kept up as well as the grass still preserve its original green and velvety texture. And as I have supposed the most to be made of the knoll round the gnarled roots of an old forest tree, it must be remembered that the plants most suitable for such a place are early spring flowers, which come out before the leaves are on the tree above. Deciduous trees are an excellent shelter for many plants which are not absolutely shade-loving, but which get out of the way before the shade comes over them.

There is one more plant which is well worthy of such a place and will stand the winter if it is not too severe, and that

is the beautiful *Triteleia uniflora*. This is one of those flowers which require to be looked into before we can see its beauty, but on a close inspection it has a grace all its own. It is slender and delicate, but for that very reason many plant-lovers will like it all the more.—A GLOUCESTERSHIRE PARSON.

THE MANCHESTER WHITSUNTIDE EXHIBITION.

MAY 14TH TO 21ST.

ONE of the most flourishing and successful of all our provincial horticultural societies is unquestionably the Manchester Horticultural and Botanic Society, and its Exhibition held at Whitsuntide the most remunerative of any in the kingdom. Changes come over it, depressed times tell their tale, exhibitors grow tired and sell their plants, but still Manchester holds its proud position, and under the management of Mr. Findlay shows what can be done, even with adverse elements to contend with.

It might have been feared that the dispersion of Mr. Shuttleworth's and Mr. Pilgrim's plants and of Mr. Wrigley's Orchids, which have in former years figured at these Shows, would have tended materially to take off from the attractions of the Exhibition; but it was not so. Others are found to take their place, and in the matter of Orchids especially I think we must look in vain anywhere else, even in the metropolis, to find such grand collections exhibited as those displayed here. We have growers in the south, but with one or two notable exceptions their plants do not figure at exhibitions, nor is such care taken of them as here, where in a well-warmed conservatory they are protected from those adverse influences which an exhibition exerts on these delicate plants.

Neither Mr. Charles Turner nor Mr. George Paul sent those magnificent plants of Roses with which we in London are familiar, but the latter firm exhibited a very good collection of twenty Roses in 8-inch pots, some of which were of excellent character. A plant of *La France* was a picture; each bloom might have been taken off to be worthy of a stand of twelve. Madame de Montchaudeau proves itself to be a first-rate pot Rose, although of very little use for the garden. There were also excellent plants with good flowers of Madame de St. Joseph, Duchesse de Vallombrosa, Vallaret de Joyeuse, Comtesse de Serenye with some exquisite flowers, Edouard Morren, Abel Grand, Camille Bernardin, John Stuart, J. B. M. Camm, Madame Lacharme, Etienne Levet, Baronne de Rothschild, and other superior varieties. The influence of the good culture which the people of Manchester have been enabled to see year after year has told upon them, for a great improvement has taken place, the first prize gained by Mr. Brookbank of Didsbury containing some excellent examples of cultivation. It is in this way that exhibitions like this advance the interests of horticulture. The show of Clematis was wonderfully good. Not only did Mr. Jackman bring his collection out in his usual style of perfect growth and profusion of bloom, but Messrs. R. Smith & Son of Worcester also contributed a collection in which were some flowers of wonderful size and beauty. The noteworthy varieties in these remarkable groups will be enumerated by your special reporter.

Pansies were a great feature of the Show; they were exhibited in pots, but as no restriction was made as to the number of plants, it seemed to me as if a large number of small plants were placed together in 8-inch pots, and as this is sanctioned in Orchids why not in Pansies? Finer blooms and fuller pots are obtained than where one plant (doing indifferently perhaps) is exhibited. The best collections were those which came from the neighbourhood, Sale, Heaton Mersey, and Didsbury all contributing and excelling Mr. Hooper of Bath. The fancy Pansies were especially striking; their varied and rich colours and their velvety appearance at once captivated the eye, while the quaintness of their markings in many instances added to their beauty. Messrs. Downie & Laird had also some fine boxes of cut blooms; but the chief interest was centred in the collections in pots. There were also two excellent collections of herbaceous plants in pots, amongst which were a very pretty Saxifrage, *Saxifraga muscoides atro-purpurea*, with dark red flowers, and *Verbascum Malcombei* with a beautiful spike of white flowers. Very pretty, too, was a pot of our friend Mr. Harrison Weir's Forget-me-not, Weirleigh Surprise.

The arrangements for the Exhibition were of their usual excellent character, and everything seemed to go on with the utmost smoothness and regularity, and favoured as the Society is with beautiful sunny weather, it will no doubt be financially a great success.—D., Deal.

STOVE AND GREENHOUSE PLANTS.—In the amateurs' great class for twenty specimens, ten fine-foliage and ten in flower, four handsome collections were staged, which occupied the low staging at the end and sides of the great Exhibition building, producing a most imposing effect. The valuable premier prize was very easily obtained by J. F. G. Williams, Esq. (gardener, Mr. Tudgey), whose magnificent plants are well known. They were on this occasion in superb condition as regards health and freshness, but perhaps not quite so well flowered as in previous years, though a mere even and handsome collection could scarcely be desired.

Erica ventricosa magnifica was a perfect globe over 4 feet high, as even as possible, and bearing an immense number of flowers. *Erica ventricosa coccinea minor*, though smaller and not quite so symmetrical, was literally "a mass of flowers." *Erica Cavendishiana*, a grand cylindrical plant 5 feet high, was in extraordinary health. *Azalea Criterion*, Duc de Nassau, *Bougainvillea glabra*, *Dracophyllum gracile*, *Aphelaxis macrantha* purpurea, and *Franciasea longiflora* completed the flowering plants, and were all represented by excellent specimens. Of the fine-foliage plants the most noteworthy were *Cycas revoluta* nearly 10 feet in diameter from tip to tip of the fronds, *Latania borbonica*, and *Pritchardia filifera*, the latter 9 to 10 feet high with eight large leaves. The second prize was secured by John Rylands, Esq. (gardener, Mr. G. Smith), with a collection that was not quite so even generally, but yet included several specimens of extraordinary merit in size and vigour. The foliage plants in this collection were undoubtedly the strongest features, and had the flowering plants been proportionately good Mr. Smith would have been a formidable competitor. *Livistonia altissima* and *Latania borbonica* were two gigantic specimens, 10 feet high and 12 feet or more in diameter, extremely healthy. *Croton variegatus* was a splendid example of good culture, 6 feet in height, as much in diameter, and exceptionally well coloured. *Alocasia Lowii* was represented by a specimen that could scarcely be surpassed in luxuriance and glossiness of foliage, while *Pritchardia filifera*, though smaller than Mr. Tudgey's plant, was in excellent form. The best of the flowering plants were *Bougainvillea glabra* and *Clerodendron Balfourianum*, which were very regularly trained, the blooms numerous, and in the former deeply coloured. The third position of honour was accorded to Henry Samson, Esq., Bowdon (gardener, Mr. Lingard), with a fair collection which included two specimens of unusual merit, the principal being a *Gleichenia* sp. of huge size and in most vigorous health. It was about 10 feet in diameter, and a dense mass of bright green fronds. The other was *Latania borbonica*, scarcely inferior to any plant of that species in the Exhibition. *Croton Weismanni* was also well shown; *Allamanda grandiflora* and *Statice profusa* being the most noteworthy of the flowering plants.

There were two exhibitors in the amateurs' class for eight stove and greenhouse plants in flower, and Mr. Tudgey carried off the chief prize by several points. His collection included some even and well-grown plants, the *Ericas* being especially noticeable. *E. elegans*, very fine; *E. Cavendishiana*, well flowered; and *E. Victoria*, healthy. Two other good specimens were *Pimelea decussata* and *Aphelaxis macrantha* rosea bearing a large number of well-coloured flowers. The second position was gained by S. Schloss, Esq., Bowdon (gardener, Mr. G. Beddoes), with plants that were but little inferior to Mr. Tudgey's. One of the finest plants was *Acrophyllum venosum* in superb health, and flowering most profusely. *Anthurium Schotterianum* was also represented by a handsome specimen, 4 feet in diameter, and bearing about fifty very large and brightly coloured spathes. *Boronia serrulata* was in admirable condition, a medium-sized plant of *Ixora coccinea* bearing flower heads of astonishing brightness.

In the nurserymen's class for twenty specimen plants, ten in flower and ten fine-foliage, the premier prize was obtained by Mr. Cypher, Cheltenham, who exhibited a group composed of massive and vigorous specimens which for freshness were scarcely surpassed by any in the Show. One fine *Anthurium Schotterianum* was more than 4 feet in diameter, in exceptional health, and bearing about three dozen spathes, very brightly coloured, and some nearly 6 inches in length and 6 in breadth. *Hedera tulipifera* was also admirably represented by a plant with a great number of richly coloured flowers. *Croton Disraeli* had excellent foliage, and was about 4 feet in diameter. *Azalea magnifica* was of very regular and almost globular form, nearly 5 feet through, and covered with its large white flowers. *Phormium tenax variegatum* was of gigantic size and with the variegation clear and distinct. The other most noteworthy plants in the collection were *Bougainvillea glabra*, symmetrically trained; *Croton Weismanni*, well coloured; and *Gleichenia flabellata* in fine condition. The only other exhibitor in the same class was Mrs. E. Cole & Son, Withington, but they well deserved the second prize awarded them, for some of the specimens were equal to Mr. Cypher's, although the collection generally was not quite so even nor so diversified. *Gleichenia rupestris* was very handsome, fresh, healthy, and of great size. *Ixora Fraseri* was bearing fine trusses of deeply coloured flowers, while *Azalea Duc de Nassau* and *Extrane* were also flowering profusely. *Livistonia altissima*, *Thrinax elegans*, and *Cocos Weddelliana* were among the best of the fine-foliage plants, being very graceful and healthy.

The corresponding amateurs' class for twenty plants contained three collections, which formed pleasing groups in the large marquee. Mr. Hardy occupied the chief position of honour with fine specimens, the following being the most noteworthy:—*Sphaerogynne latifolia*, 4 feet high, with enormous leaves 18 inches long, and nearly as much in diameter; *Spirea palmata*, well flowered; a healthy *Stephanotis*, symmetrical *Aphelaxis*, and a vigorous *Yucca*. Mr. Hammond was second, among his plants being a handsome specimen of *Dendrobium Devonianum* bearing a large number of flowers, and an *Aralia Veitchii* in splendid condition.

The third position was accorded to Mr. Boardman, who staged a collection that was very near to the preceding one in merit, but containing several rather small plants.

Mr. B. S. Williams was the only exhibitor of *Amaryllises*, and gained the first prize for beautiful varieties and excellent plants. Princess Dagmar and Ackermannii were especially noticeable for their good colour.

LILIUUMS.—The display of these beautiful plants, although not very extensive, was extremely good. The two competitors exhibited well-grown specimens with large flowers, the fragrance of which was perceptible throughout the large marquee. Mr. Adams's plants were the most even and vigorous, and the chief prize was awarded for them; the other grower's, Mr. Filde's, being less regular, but with enormous flowers.

AZALEAS.—Two classes were devoted to these plants, but there were no entries in the amateurs' class for six. Three competitors entered in the nurserymen's class for ten specimens, but there was a noticeable falling-off in quality. The premier prize was secured by Mrs. Cole & Son with large, luxuriant, but somewhat rough specimens, fairly well flowered and the colours good. Duchesse Adelaide de Nassau was especially bright, Duc de Nassau and Criterion were exhibited in vigorous condition, Stella and Stanleysana being of great size. Mr. James Cypher occupied the next position of honour with plants that were but slightly inferior to the first mentioned. The flowers were unusually large, especially of *Roi d'Hollande*, *grandis*, and *Triumphans*, and the colours rich. Mr. John Stevenson, Timperley, was third with a collection of rather loose specimens, but including one very good example of *Juliana*.

ERICAS.—Only two collections of Heaths were staged, the premier awards in the amateurs' class for six specimens and the nurserymen's class for eight being awarded to Mr. Tudgey and Mrs. E. Cole & Son respectively. The plants in both collections were neatly trained and vigorous, but not bearing quite an average quantity of flowers. Among Mr. Cole's plants *Erica ventricosa grandiflora* and *E. ventricosa oocinea* were handsome specimens, especially noticeable for their exact symmetry and health.

PHILAEANTHUMS.—Eight classes were devoted to these plants, divided equally between amateurs and nurserymen. A large number of plants were exhibited, and the competition was rather keen in several instances, although the effects of the unfavourable season and the earlier date of the Show were evident in the rather less well-flowered condition of the plants. Mr. Charles Rylance, Aughton near Ormskirk, was the principal exhibitor in the nurserymen's classes, and he carried off the premier prize in every class with vigorous fairly well flowered specimens that merited the positions awarded them. Eight plants in each of the classes for Zonal, Show, Tricolor, and Fancy varieties were shown, comprising a very good selection. Mr. Robert Gore, Huyton, followed in the classes for Zonal and Show varieties, but his plants were rather backward, and would have been in much better condition a week later. In the amateurs' classes the prizes were offered for collections of six. W. J. Leigh, Esq., Lyme Hall, Disley (gardener, Mr. Cooper), being placed first with Zonal varieties, profusely flowered healthy specimens 3 to 4 feet in diameter. Louise had enormous trusses of richly coloured flowers; Master Christine had large compact trusses; and Samuel Plimsoil was exceptionally fine. G. Silkenstadt, Esq., Didsbury (gardener, Mr. C. Humphreys), was second with fairly well flowered plants, among which Jean Sisley and Rose Bradwardine were especially noticeable. F. Sumner, Esq., Hayfield (gardener, Mr. McGaw) was a close third, one of his specimens, Lady Suffield, being remarkably fine. Tricolor varieties were staged by three exhibitors, the foremost position being attained by Mr. McGaw, followed by Mr. Crompton and Mr. Johnstone, all with vigorous plants, differing chiefly in the colouring of the foliage.

ROSES.—These were unusually few in numbers, only one of the three classes appropriated to nurserymen—namely, the one for twenty Roses in pots not to exceed 9 inches in diameter, being represented, and in that Messrs. G. Paul & Son, Cheshunt, well maintained their fame as growers. The plants were of excellent habit, compact, vigorous, and healthy, the foliage a very bright glossy green, and the flowers well formed, of good substance, and rich colours. Amateurs' collections of six were shown by three exhibitors, but the only really good plants were those from Mr. Brookbank, who obtained the premier award with neat clean specimens bearing an average number of blooms. Marie Baumann, Baronne de Rothschild, and Centifolia rosea were the best.

CLEMATISES.—As already indicated these formed a grand display, although only two collections were exhibited. Rarely, indeed, are Clematise seen in finer condition than they were at Manchester, and their value as decorative plants was apparent to all the numerous visitors. The class was for thirty specimens, and the chief prize was awarded to Messrs. George Jackman and Son, Woking, Surrey. The specimens were in 10-inch pots, very compact, well trained, and about 3 feet high, the flowers numerous and well coloured. Many excellent varieties were represented, but the following were the most noticeable:—Lady Londesborough, Lord Derby, Fair Rosamond, Miss Bateman, The Queen,

Sir Garnet Wolseley, Aurelia, and Edith Jackson, all excellent in the form and colour of the flowers. Messrs. R. Smith & Co., Worcester, followed with a handsome collection of plants that were larger and less compact than the others, but with flowers of enormous size and more highly coloured. Fairy Queen, Mrs. Quilter, Anderson-Henry, Star of India, Marie Lefebvre, and Magnifica were remarkably fine, some of the flowers being nearly a foot in diameter.

ORCHIDS.—The display of these beautiful plants was remarkably good, the exhibits being very numerous, the specimens extremely healthy, and the colours of the flowers very bright. Six classes were devoted to them—namely, four for amateurs and two for nurserymen, the competition in all being good, and in some instances very close. They were arranged on each side of the large glass building usually appropriated to them, and formed rows in front of the large specimen fine-foliage and flowering plants, the effect produced by a skilful disposition of the different colours being admirable. The Orchids unquestionably formed one of the chief attractions of the Exhibition, and seldom are they seen in better condition. Most of the finest species and varieties in cultivation were represented, the handsome clustered-flowered *Dendrobium thyrsiflorum* and *D. densiflorum* showing very prominently. *Cypripediums* were also numerous and in superb condition, especially the distinct *C. caudatum*, with long pendulous petals; *C. villosum*, *C. barbatum*, and *C. spectabile*; *Odontoglossums*, particularly the lovely *O. cirrhosum*; *Epidendrums*, *Cattleyas*, and *Masdevallias* all combined to produce an excellent display. The chief of the amateurs' classes was that for fifteen distinct species or varieties in flower. There were three exhibitors, and the collections sent comprised some of the finest plants in the Show. The premier award was secured by George Hardy, Esq., Timperley (gardener, Mr. J. Hill), with magnificent specimens, of which the following were remarkably well flowered—*Masdevallia Harryana*, bearing more than fifty large brightly coloured flowers, *M. Veitchii* and *M. Lindeni* were equally attractive; *Cattleya Mossiae* variety *aurea*, over a yard in diameter, with about two dozen enormous blooms. A companion plant of the true *Cattleya Mossiae* was also shown in similarly fine condition. *Odontoglossum cirrhosum* was represented by a well-coloured variety with nine panicles of flowers. A large pan, about 2 feet in diameter, was entirely occupied with the lovely little *Odontoglossum Cervantesii*, bearing upwards of a hundred flowers, very distinctly and clearly marked with their peculiar concentric brownish-coloured bars. The central plant of the group was an extremely large *Dendrobium thyrsiflorum*, with thirty immense spikes of flowers; but the plant was not in such health as the others, the foliage being rather bad. A grand specimen of the beautiful *Thunia Bensoniae* var. *Marshalliae* was shown with two vigorous stems 4 feet high, and large terminal spikes of handsome flowers. The only really weak plant was *Saccolabium ampullaceum*, rather small, but with well-coloured flowers. This remarkably fine collection was clearly entitled to the recognition it received. Next in order were the specimens from R. B. Dodgson, Esq., Blackburn (gardener, Mr. T. Osman), which were also uncommonly vigorous and well flowered. The most noteworthy were *Cypripedium villosum*, nearly 4 feet across, and bearing forty flowers; *Vanda suavis*, surprisingly vigorous, with six growths, nearly 5 feet high, and each bearing a spike of about a dozen flowers; *Odontoglossum vexillarium*, extremely well flowered; *Dendrobium nobile*, most luxuriant; and *D. densiflorum* with three dozen spikes. The third prize was secured by Wm. Leech, Esq., Fallowfield (gardener, Mr. W. Swan), with a collection that was rather weak in several points, but containing some healthy vigorous specimens. *Cypripedium spectabile* was especially noticeable for its fresh healthy appearance; *C. candidum superbum*, with a dozen flowers, the pendulous petals of which were over 2 feet in length.

Two other classes were devoted to amateurs' productions. The chief prize in the class for nine specimens was obtained by F. Yates, Esq., Blackburn (gardener, Mr. Thompson). The feature of this group was the shallow boxes about 2 feet square which were filled with plants of *Odontoglossum vexillarium*, *O. cirrhosum*, and *Masdevallias*, each box containing about twelve plants very well flowered. Dr. Ainsworth, Broughton (gardener, Mr. Mitchell), followed with good plants, the most noteworthy being *Calanthe veratrifolia* with thirteen large spikes of pure white flowers. Mr. W. Swan was placed third with an average collection, including a good *Dendrobium Falcoueri*. Groups of six Orchids came from Joseph Broome, Esq., Didsbury (gardener, Mr. A. Williams); Wm. Turner, Esq., Winsford (gardener, Mr. Bolt); and John Heywood, Esq., Stretford (gardener, Mr. Elphinstone), the prizes being awarded in the order named for healthy and fairly well-flowered plants. The best single specimen was *D. Schroderi* from Mr. Osman, and the next *Dendrobium thyrsiflorum* from Mr. W. Swan, both bearing a number of large spikes of flowers.

The most important nurserymen's class was for sixteen Orchids, in which there were three entries, the prizes being obtained by Mr. B. S. Williams of Upper Holloway, London, Messrs. H. James of Castle Nursery, Norwood, Surrey, and Mr. Cypher in the order named. Mr. Williams's plants are so well known that they scarcely

need description, but the specimens of *Epidendrum vitellinum majus* was remarkably fine, certainly two of the grandest ever exhibited. *Cattleya Warneri* was also notable for the enormous size of the blooms and the excellent colour. The whole collection was an uncommonly handsome one. Mr. James' plants were profusely flowered, but small and rather uneven, Mr. Cypher's being somewhat similar. The only other nurserymen's class was that for ten specimens, and in this the prizes were awarded in the same order as in the one previously mentioned, the collections being similar in their different grades of merit.

FINE-FOLIAGE PLANTS.—These were very numerous, and several exceptionally beautiful collections were shown in the different classes devoted to them. There were three exhibitors of eight specimens, the chief award being secured by Mr. Osman, his plants including admirable examples of *Croton Disraeli* well coloured, *Anthurium crystallinum*, handsome foliage; *Gleichenia rupestris*, 7 feet high and the same in diameter, and *Cycas revoluta* with many whorls of grand leaves. J. H. Birley, Esq., Pendleton (gardener, Mr. Eken) was second with good specimens of *Cordyline indivisa* and *Lantana borbonica*. J. Broome, Esq., Didabury (gardener, Mr. A. Williams) was a remarkably good third, and exhibited *Theophrasta imperialis*, *Cocos Weddelliana*, and *Croton angustifolius* in excellent condition. Mr. B. S. Williams, Upper Holloway, was the only exhibitor in the classes for ten *Dracenas* and eight *Crotons*, being awarded the premier prize in each class for vigorous and exceptionally well-coloured specimens. Among the *Dracenas* O. Willis, O. Salomonea, O. superba, and O. Goldieana were notable; and of the *Crotons*, C. Burtoni, C. Evansianus, C. Disraeli and others were good. Collections of six were well shown by John Duffield, Esq., Fallowfield; Mr. Hammond, Mr. Osman, Mr. Beddoes, and Mr. Rylance who secured the principal prizes.

FERNS.—All the specimens shown in the classes devoted to these plants were extremely vigorous. The best collection of eight stove and greenhouse species and varieties was Mr. Beddoes', who easily secured the first prize with fine specimens of *Davallia tenuifolia*, D. Mooreana, and several extraordinarily large *Gleichenias*. Messrs. Lingard and Tudgey followed with highly meritorious plants. Hardy Ferns were also well represented, one of the finest collections exhibited being that from W. Brockbank, Esq., Didsbury (gardener, T. Morris), which gained the first prize in the class for twelve distinct forms. Some good *Osmundas* were staged by this exhibitor, O. regalis, O. regalis cristata, and O. Claytonia being very fresh and healthy. Arthur Birley, Esq., Pendlebury (gardener, John Hesketh), was a close second, the remaining prize being obtained by G. Hodgkinson, Esq., Dunham Massey (gardener, Mr. Boardman). There were five exhibitors in the class for six *Adiantums*, very healthy and large specimens being staged. Mr. Boardman was first, his collection including A. concinnum in superb condition, A. farleyense, vigorous; and A. assimile, equally good. Mr. Osman was placed second with a less even collection, but very healthy, one plant of A. tenerum being exceptionally beautiful. Mr. Tudgey was third, his finest specimen being A. macrophyllum of great size.

NEW PLANTS.—Mr. B. S. Williams was the only exhibitor of new plants in the nurserymen's class for twelve distinct new species or varieties, and he was deservedly awarded the premier prize for an admirable selection, of which the following were certificated by the Judges:—*Croton Cheloni*, with long, narrow, spirally-twisted leaves, pleasingly marked with red and green; C. Hanburyanus, leaves long, centre dark green, margin yellow and crimson; C. Evansianus, leaves slightly three-lobed, veined with crimson and gold on a bright green surface; *Cupania elegantissima*, with pinnate leaves nearly 8 feet in length, very elegant; *Katakidzamia Hopei*, a distinct glossy pinnated-leaved Cycad; and *Pelargonium Maid of Kent*, an early-flowering variety of great value for decorative purposes, with white flowers marked with rose in the centre of the petals. Owing to the plants having been moved we were unable to obtain the names of those exhibited in the amateurs' class.

HERBACEOUS AND ALPINE PLANTS.—Two very beautiful collections of these were shown—one in the amateurs' class for thirty-six plants, and one in the nurserymen's class for eighty, Mr. W. Brockbank being awarded the first prize in the former, and Mr. Brownhill received a similar honour in the latter. Mr. Brockbank exhibited many rare and lovely hardy plants, and all were remarkable for their fresh healthy appearance. The most notable were *Aquilegia glandulosa*, very fine; *Verbascum Malcombei*, a handsome form, with creamy flowers of great substance closely set in the spike; *Trillium grandiflorum*, well flowered; *Androsace sarmatensis*, a rare and pretty alpine; and *Gnaphalium Leontopodium* (the Edelweiss), flowering, and evidently in vigorous health. Mr. Brownhill's plants were also unusually attractive, and for such a large collection could scarcely be surpassed. A double form of *Saxifraga granulata* was very pretty; *Pæonia tenuifolia*, with finely divided foliage and richly coloured flowers; *Melittis Melisophyllum*, a rare and pretty Labiate; *Saxifraga muscoides atropurpurea rubra*, covered with darkly coloured flowers; *Myosotis Wierleigh Surprise*, and a great many other plants were highly creditable to their cultivator.

PANSIES AND VIOLAS.—Seven classes were devoted to these plants, and in several the competition was keen and the exhibits fresh and vigorous. A large number of varieties were represented, and generally in excellent form, the flowers being symmetrical and the colours clear and bright. The chief prizes in the amateurs' classes were obtained by Messrs. Beard, Brockbank, and Lumbers; in the nurserymen's classes by Mr. Henry Hooper, Bath, Mr. Brownhill, and Mr. S. Robinson, Sale.

HARDY SHRUBS AND TREES.—Messrs. John Waterer & Son, Bagshot, were the only exhibitors in the classes for shrubs and ornamental Conifers, the chief prize being awarded to them for each exhibit. Hollies were represented by good specimens and varieties. Some exceptionally fine Conifers were also sent, these being arranged in a row along the terrace near the Exhibition building with excellent effect. *Retinosporas*, *Yews*, and *Portugal Laurels* were all shown in remarkably healthy condition. The *Rhododendrons* occupied as usual one end of the large marquee, and although the flower heads were not so large nor so numerous as on previous occasions, yet they were very bright, and being arranged with hardy Ghent Azaleas a rich effect was produced.

MISCELLANEOUS GROUPS.—Foremost amongst these was the beautiful group from Mr. B. S. Williams which occupied the central table in the Exhibition building. Fine-foliage plants such as *Palms*, *Dracenas*, *Crotons*, *Ferns*, and many other elegant plants were arranged with choice *Orchids*, *Azaleas*, &c., forming a very attractive display. Messrs. Dickson & Robinson, Old Millgate, Manchester, sent a collection of ornamental shrubs, *Roses*, and other plants. Mr. Henry James staged a group of *Calceolarias*. Messrs. Jackson & Son contributed a number of *Azaleas* and *Clematises* in boxes for window decoration, the latter being extremely beautiful. Messrs. John Standish & Co., Ascot, Berks, exhibited a large group of Japanese *Maples* and *Adiantum gracillimum*, which attracted considerable attention. Mr. W. Yates, nurseryman, Market Place, Manchester, arranged a bright group of stove and greenhouse plants. Messrs. Francis and Arthur Dickson and Son, Upton Nurseries, Chester, sent an elegant group of fine-foliage plants. Messrs. Downie & Laird, Frederick Street, Edinburgh, exhibited several stands of fine Pansy blooms, while Messrs. G. Paul & Son sent boxes of cut *Roses*. For all the above extra prizes were very deservedly awarded, and the groups assisted greatly in adding to the attractions of the Show.

HORTICULTURAL APPLIANCES.—A large space of ground was occupied by the exhibits from the various horticultural builders. The principal were the following:—Messrs. R. Halliday & Co., Middleton, Manchester, sent samples of their portable frames, greenhouses, and several boilers, all excellent in their way. Messrs. Follows & Bate, Manchester, exhibited a large number of water barrows, garden chairs, flower stands, and other articles of similar character very neatly executed. Mr. Henry Inman, Stretford, Manchester, sent a number of their handsome garden houses in a variety of designs, and all thatched with the common ling, which no doubt forms an excellent roof. They also sent rustic bridges, chairs, and many other articles. Messrs. Elliott, Aleser, and Olney, Deansgate, Manchester, were the only other large exhibitors, and they sent a number of garden chairs and flower stands.

Altogether the Show was both a great and a good one, but was not in all points equal to some previous displays, for in several classes there was little competition, and in others none at all—a not unusual circumstance when the classes are very numerous. Several collections of fruit were shown, but they had been removed previously to our arrival at the Exhibition.

The Exhibition was visited by large numbers of persons, the greatest number being admitted on Whit-Monday, when £640 were taken, the price of admission being 1s. The opening was not distinguished by any particular ceremony, as was the case last year, when Lord Derby attended and delivered an appropriate address.

NOTES AND GLEANINGS.

THE number of visitors who passed the turnstiles at the ROYAL HORTICULTURAL SOCIETY'S GARDENS on Whit-Monday was 19,188. The amount realised at 2d. each was £159 18s.

—We are informed that the NATIONAL TULIP SOCIETY will hold their annual Exhibition on the 29th inst. in Manchester, but owing to the unfavourable season several of the principal exhibitors fear they will be unable to compete.

—ONE of the curiosities of Garbrand Hall is a COMMON LILAC GROWING ON A WALL, its roots being entirely confined to the upper portion of the wall, which is partly covered with Ivy. The shrub is a symmetrical and vigorous specimen, 6 or 7 feet high and the same in diameter, and is now showing a profusion of dark-coloured flowers. Mr. Childs finds that this Lilac thrives uninjured through the heat of summer, when all the moisture it can derive must be such as may rise in the brickwork from the springs at the base of the wall.

—THE schedule of the BURTON-UPON-TRENT HORTICULTURAL SOCIETY announces that the annual Exhibition will be held on June 23rd. The classes are very numerous, no less than

144 being provided, in all of which first, second, and third prizes are offered. The chief class is, however, the open one for twelve stove or greenhouse plants, six fine-foliage specimens and six in flower, the prizes being respectively, £20, £10, and £5, which will no doubt induce close and good competition. Plants, flowers, fruits, vegetables, are usually well represented at Burton, in addition large groups of plants from Rangemoor and other gardens, which contribute greatly to the attractions of the exhibitions.

— WE learn from the schedule of the KINGSTON AND SURBITON ROYAL HORTICULTURAL SOCIETY that they will hold their sixteenth annual exhibition on the 23rd of June, when prizes will be offered in seventy-nine classes. The classes are in four divisions—namely, open classes, those for subscribers, for amateurs, and for cottagers; and in all prizes of three values are offered, the most important being in the open class for nine stove and greenhouse plants in flower, for which £5, £3, and £2 will be awarded. The financial affairs of the Society are very satisfactory, and the shows of the past have been good and well managed.

— THE house devoted to specimens of *ANTHURIUM SCHERTZERIANUM* at Messrs. Veitch's nursery is now extremely gay, for there are about 250 large and brilliantly coloured spathes fully open. Some of the plants are over 2 feet in diameter, extremely vigorous and healthy, while the spathes are in several instances unusually large and deeply coloured. The stock of small plants is extensive, and their sturdy condition indicates the care bestowed upon their culture. This fine species, which is now so well known, is not likely to be surpassed in freedom of growth by the newer and somewhat brighter *A. Andreanum*, although the latter is very attractive and peculiar.

— IN the Royal Botanic Society's Gardens, Regent's Park, an enormous SPECIMEN *AZALEA* named *Sirius* in the large conservatory was recently bearing a great number of flowers. It is like a small tree, 8 feet high, with a stem 4 or 5 inches in diameter, and an umbrella-shaped head about 6 feet across. The flowers were of medium size, rosy crimson in colour, and so freely produced that scarcely any foliage could be seen.

— IN the Orchid houses at the same Gardens *PHALENOPSIS AMABILIS* has been flowering since March, and still retains some of its flowers. The pretty little *P. Luddemanianum* is also in good condition and flowering freely. *Oncidium luridum* has a panicle of flowers over 5 feet in length.

— MR. BROWN of Hendon grows *FUCHSIAS* FOR MARKET very extensively and well, only two varieties receiving his attention—namely, *Lady Heytesbury* and *Prince Imperial*, of which several thousands are sent to market in 48-sized pots. Cuttings are struck early in spring and grown on quickly without allowing them to become drawn, and with free exposure to light and air the shoots do not require any pinching. A compost of loam, leaf soil, sand, and horse dung is employed with good drainage. Little specimen plants are produced by the present time, which flower very freely and find a ready sale for decorative purposes.

— A VISITOR to Regent's Park writes as follows concerning *ROSE RED DRAGON* exhibited in Messrs. W. Paul & Son's collection there—"Of all the handsome varieties which were so well represented, the one that especially attracted my attention was the new climbing Hybrid Perpetual *Red Dragon*. This fine variety originated among some seedlings in Messrs. Paul's nurseries at Waltham Cross in 1876, and was admirably figured in the 'Rose Annual' for 1878-79. The flowers are of great substance, cupped, and of an intensely rich crimson colour in a young state, becoming tinged with purple as they advance. The plant is extremely vigorous with handsome foliage, and its habit renders it well adapted for training to pillars and similar positions."

— "R. P. B." writes:—"I have not grown *AURICULAS* for long, but long enough to know that they do not require nursing, as 'A SUBURBAN AMATEUR' suggests on page 356. My experience of them is that they are extremely easy to cultivate; and as a gardener whose endeavour is to please his employer I shall certainly go in for *Auriculas* in the same way that I do for *Pansies*, *Phloxes*, *Dahlias*, and others of the wonderfully improved flowers which are now in cultivation."

— WE learn that arrangements have been made with the Messrs. John Waterer & Sons, Bagshot, for a grand display of *RHODODENDRONS* to be held next month in the gardens of Cadogan Place.

— A COUNTY FLOWER SHOW, open to all residents in Hertfordshire, will be held at Gorbamby, the seat of the Earl of Verulam, near St. Albans, on Friday and Saturday, August 20th and 21st. This Show will be in connection with that of the Hertfordshire Bee-keepers' Association, of which the Earl of Verulam is President. Prizes to the amount of £120 will be given for flowers, fruit, and cottagers' exhibits. Schedules may be obtained on application to the Flower Show Secretary, Mr. John Huckle, King's Langley, Herts.

— ON the night of Tuesday last a crowded congregation assembled in the church of St. Catherine Cree, Leadenhall Street, London, to hear the Rector (Rev. Dr. Whittemore) preach his annual FLOWER SERMON. There were sweet scents and bright colours throughout the building, for nearly everybody brought flowers. All the hymns had reference to flowers, and three of them had been specially written. The text was from 1 Kings iv. 33: "The Hyssop that springeth out of the wall." There had been some uncertainty as to the plant meant, but he supported the opinion that it was a little wild bush found in Palestine and parts of Europe, a bush with glossy green leaves and small white flowers, from which hung a tassel of deep violet. Having explained that the Hyssop had always been supposed to have healing virtues, that it was used for sprinkling blood in Jewish religious services, and that dipped in vinegar it was presented to Christ on the cross, he drew from the great associations of this plant some wholesome lessons. Referring to the beauty of flowers he said, within the last few years botanists had begun to laugh at people who thought that flowers were beautiful simply to give pleasure. New lines of inquiry had changed botany from a dry to a delightful study. Flowers were now believed to be sweet and beautiful in order, for one reason, to attract the insects; and to give pleasure was not the sole end of beauty in flowers, it was part of the Creator's design.

— MR. CONSUL SEBRICHT, in a report on the trade of Corfu, refers to a new manufacture—PYRENE OIL, which is obtained from the residuum of the pulp and kernels of Olives, after the berries have been submitted to the usual insufficient amount of pressure by which the oil is extracted in all the Olive-producing countries bordering on the Mediterranean. The residuum in question retains from 2 to 4 per cent. of the oil, which for all time preceding the discovery and application of the present ingenious method of extracting it was wholly lost to commerce. The experiment, at first hazarded on a limited scale, has proved so successful that there are now two manufactories of this product in active operation in the island of Zante; and to the single high-pressure cylinder employed there at the outset another has since been added, worked by two steam engines of thirty horse power, and capable of producing, one year with another, from 700 to 750 tons of oil. As in general a full Olive crop is produced only in alternate years, the supply of the necessary material must vary accordingly; but a pretty regular supply is obtained from Greece, Epirus, and Italy, where, with the exception of Lucca and Tuscany, the methods employed in the oil manufacture remain in a state of almost primitive inefficiency.

— *CHRYSANTHEMUM FRUTESCENS ETOILE D'OR*.—My opinion is, that this plant will become a great favourite as a decorative plant and for cut flowers. Its large ox-eye Daisy-like flowers are so soft in colour and produced in abundance. I have about a dozen plants, from which flowers have been cut regularly for the past eight months. There are two varieties of the yellow, as of the white type; that for which Mr. Howard of Southgate received a first-class certificate is, however, the best.—DUBLINENSIS.

— GLASS BIRD SCARES.—Some years since I remember seeing in gardens triangular pieces of plate glass, which were suspended by a string fastened to a bent stick, and placed in the neighbourhood of seed beds to scare small birds. The flash of light they made in the sun was quite surprising, and I understood they were effective. Can any of your readers tell me where I can obtain them?—STEPHEN BONNETT.

— THE Hon. Marshall P. Wilder in his presidential speech at the Massachusetts Club on the 17th ult., spoke as follows on the PROGRESS OF HORTICULTURE IN AMERICA.—"When I commenced the cultivation of the soil there was not one horticultural society on our continent; now there are fourteen hundred of these institutions. Fifty years ago the products of our soil were scarcely thought worthy of a place in the statistics of our industry; now our exports amount to nearly six hundred

millions of dollars annually. Then the supplies of fruits were limited to a few varieties, and to a few weeks in use; now our markets abound with fruit for all seasons of the year. Then the only Strawberry in our market was the wild Strawberry from the field, and for only a short time; now we have this delicious fruit by the facilities of transportation for two or three months, and in such quantities that we have received from the city of Norfolk, Va., 16,000 bushels in a single season; and so great has been the interest in this fruit that my register contains the names of more than 350 kinds of Strawberries which have been under cultivation in my day. Then there were no American Grapes cultivated in our gardens except here and there a Vine of the Catawba and Isabella; now there are nearly a hundred varieties of American Grapes under cultivation in our land, and the Grape may be had for six months in the year; and so extensive are our vineyards that an order for our American wines to the amount of one hundred thousand gallons has been recently received from Europe. Then the cultivation of the Pear was limited to a few varieties; since which the gardens of Manning, Hovey, and Wilder have embraced more than eight hundred varieties of this noble fruit. Then no exports of fruit of any note had been made; now Boston alone has shipped to other places half a million barrels of fruit in a year, and the export of Apples from this country has amounted to nearly three millions of dollars in a year. Fifty years ago neither Mr. Hovey, myself, nor, so far as I know, any other person in our country, hybridised a fruit or a flower; now our country abounds in new varieties which are esteemed in Europe as equal to any they possess. And when I reflect on the good which this Club has accomplished I am devoutly grateful that my life has been spared until this time, and that I am permitted to share in the blessings which have flowed from its labours."

PROPAGATING SHOW PELARGONIUMS.

DURING the present month and in June it is advisable to insert cuttings of Pelargoniums of the show and decorative sections for blooming in spring and summer of the following year. The best cuttings are the green side shoots which are produced on plants either flowering now or coming into flower. These produce roots very readily in an average temperature of 65°. After they are rooted they require potting off into 3 and 4-inch pots and kept growing throughout the summer. In autumn, not later than the first week of October, shift on into 5 and 6-inch pots, and keep gently growing throughout the winter. The plants will require twice pinching. I employ a good loam to which a fourth part of cow dung rubbed down and a little rough sand is added. When the roots have well hold of the soil liquid manure is necessary. Carefully grown these furnish good plants 18 inches to 2 feet across, and bear very large trusses.—R. P. B.

ROSE PROSPECTS.

THIS long-continued spell of east wind may well excite grave apprehensions as to the state and condition of Roses. I have just been through the garden of my friend Mr. Tinsley of Grappenhall Lodge, Warrington, who has a good collection of all the best kinds on the Manetti and seedling Briar stocks, and some on their own roots. They were well cared for during the severe winter, and have been carefully pruned; but on looking through them we were grieved to find nearly every Rose affected much in the same way as the shoots enclosed. Evidently decay is setting in, and I should be glad to know what you think the cause. There was no appearance of it when the Roses were pruned; is it, then, the effect of unripened wood or of frost? The brown spot appears, and then it spreads in a band round the shoot, affecting the bark at first, but evidently going inwards and destroying the shoot. Would any of your correspondents say whether they have noticed anything similar to it amongst their Roses?—D., Deal.

[We attribute the injury to the severity of the frost of last winter.—EDS.]

CARPET BEDDING.

THE accompanying figure represents a design by Mr. McIntyre, the excellent Superintendent of Victoria Park, and when planted as under, this "star bed" was much admired. The groundwork of the centre was formed of *Coleus splendens* with a central plant of *Echeveria glauca metallica*. The body

of the bed penetrated by the rays of the star was of the close green *Mentha*. The long rays were planted with *Alternanthera magnifica*, and the short rays with *A. amena*, the whole margined with very small plants of Golden Feather, forming sharp thin

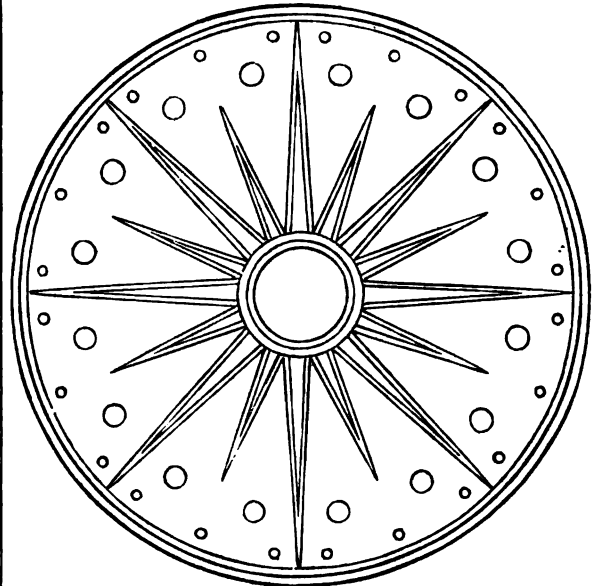


Fig. 55.

streaks. The large circles in the groundwork represent single plants of *Echeveria tabulaeforme* in a cushion of *Sedum glaucum*, and the small circles *Pachyphyton bracteosum*. The outer margin was formed with three rows as follows:—Outside, *Echeveria secunda glauca*; next, *Alternanthera amena*, with *Mesembryanthemum cordifolium variegatum* next to the *Mentha*. Both in design and planting this bed is very simple, and the bright star on its green ground was highly effective.

CHOICE PRIMULAS.

DURING a gardening tour towards the end of February it was my good fortune to see the finest lot of Primulas I ever met with at Winthorpe House, Newark-on-Trent, one variety being Williams' New Scarlet Coccinea, one hundred plants of it, every one true and the colour most brilliant. I have seen nothing to equal it for colour, and every bloom was carefully fertilised. Mr. Drabble has a fine companion for it, a new white that he raised in 1878. The habit of the plant is perfect; and the heads of bloom, which are borne on a thick stem 2 inches above the leaves, have the appearance in the distance of heads of white Hydrangeas. This is the finest white Primula I have ever seen, and it is named Empress of India. I hope in due time to see the seed of these two fine strains advertised.—VISITOR.

PRIMROSES AND POLYANTHUSES.

HAVING read the correspondence in the Journal upon Primroses, I have thought that the following facts may possibly be worth your notice.

In a small part of my garden almost entirely occupied by self-sown wild Primroses, I have at different times found a plant bearing perfectly double flowers. These I have at once transplanted to other parts of the garden, dividing and subdividing them until I have now upwards of fifty plants all bearing large double flowers in profuse quantities, and growing as vigorously as wild plants. This year a very perfectly formed yellow Polyanthus has appeared in the same place. I call it Polyanthus, as it is quite different in growth to the Oxlip, being of a stiffer and more perfect form. While gathering Primroses lately in the middle of a large wild wood, supposed to be primeval and far from any gardens, I found a plant of Polyanthus of which the flowers were a deep brownish-red colour.—M. T. P.

THE results obtained by Mr. Dod and myself appear to be very much the same, but in his first letter he refers more par-

ticularly to the seedlings obtained from the cultivation of Primroses whilst I have only grown the Polyanthus.

I do not regard simply as on a par with old wife's fables the statements of Devonshire gardeners that when Cowslips are introduced into that country they soon turn to Primroses, or the Yorkshire people that when Primroses are turned upside down they change to Polyanthuses. I think it is very likely something of the kind really takes place. I do not think it probable that the Cowslip in Devonshire actually changes to a Primrose, but very likely the seedlings from the Cowslip do in a few generations produce the Primrose, and a little evidence on this point from gardeners resident in Devonshire would be interesting. As to Primroses being turned upside down changing to Polyanthuses, has Mr. Boyes ever tried it? Years ago, nearly as far as my memory carries me back I did, but not successfully; still at the same time remarkable changes do take place in these flowers, and for a Polyanthus which has flowered for several years to change to a Primrose is not at all uncommon, and if it happened to do so after being planted upside down the effect may be attributed to an erroneous cause. Mr. Boyes in his letter refers to the difference between a species and a genus, and as to what constitutes a species. This opens a very wide question of inquiry, and I may on a future occasion have something to say with regard to it, but as questions of this kind are apt to get into rather a confused state, particularly if any other point is discussed at the same time, perhaps you will allow me to suggest that writers should keep their remarks about the Polyanthus, and those about species and their origin, under separate headings.—AMATEUR, Cirencester.

I HAVE to thank Mr. Dod and your other correspondents for their interesting communications on the Oxlip subject. I do not think it will serve any good purpose to quote the standard authors. I have looked them over since your last, and find that they all speak in the same tone—that of surmise or qualified opinion.

No one has said the one thing really pertinent—"I have crossed the Primrose and Cowslip, and produced the Oxlip." In my own hands the Cowslip, when set with Primrose pollen, produced large fleshy seed-like bodies, but germless and effete as to reproductive power. The reverse cross was also tried, but without result. I regret that I am tied for time this evening, but hope that this will not be too late for insertion, in which case I hope to resume the subject next week.—R. TREVOR CLARKE.

I HAVE proved, as well as Mr. C. W. Dod, that if Polyanthuses are neglected they will gradually degenerate into the common Primrose form, and, instead of carrying several flowers on a branching stalk, only one is produced. If your readers would take a Primrose out of the hedge they will find, by tracing the flowers to the root, that all the flower stalks are connected and form a sessile umbel of flowers, and is it not possible that under high cultivation that a stalk is formed and takes a Polyanthus-like form?—W. ROBERTS.

P.S.—On page 372 I should have said, "The London Catalogue of British Plants," not London's.—W. R.

PERMIT me to note, I grow and hybridise a large number of Polyanthuses, Cowslips, Oxlips, and Primroses. One of the most recent sports I had from a single was a double Polyanthus, which since remained true. On several occasions I have noticed both Primroses and Polyanthuses growing on the same plant, and distinctly from the same crown. Mr. Boyes would attribute this to "intercrossing" (page 372), but I consider it tends to show that the Polyanthus, Cowslip, and Oxlip owe their origin in the first instance to the common Primrose (*Primula vulgaris*).—W. J. M., Clonmel.

ORCHIDS AT WESTBROOK, SHEFFIELD.

THE Orchids at the above-named place, the residence of Henry Wilson, Esq., are at the present time in most robust health, and reflect the greatest credit on the well-known able gardener Mr. Clements. In the East Indian house are about fifty plants of *Phalenopsis Schilleriana*, *P. grandiflora*, one a superb variety, *P. amabilis*, and *P. Luddemanniana* with leaves from 8 to 18 inches in length, of the firmest texture and without spot or bluish. On a shelf close to the roof were from thirty to forty specimens of *Dendrobium Bensoniæ* flowering very freely. In another position is a fine specimen of *D. Schröderi* showing twenty spikes, *D. densiflorum*, *D. albo-sanguineum*,

D. eburneum, *D. chrysotoxum*, and *D. nobile*, all extremely fine. *Aërides affine* is showing three grand spikes; *A. Fieldingi* two spikes, which are branching and will ultimately attain the length of nearly 3 feet. The *Vandas* and *Saccolabiums* are all that could possibly be desired, being clothed with healthy leaves to the rims of the pots.

In the small house devoted to Orchids in flower is a handsome plant of the rare *Lycaste Skinneri alba* bearing ten of its lovely flowers. In the same house are also two baskets of *Dendrobium Falconeri*, forming pyramids 2 feet high and the same through, showing hundreds of their charming white and purple flowers. There are also in flower fine varieties of *Cattleya Skinneri* and *C. Mendelii* with flowers $7\frac{1}{4}$ inches in diameter; *Dendrobium crassinode Barberianum*; *Odontoglossum Alexandræ*, *O. Halli*, *O. cirrhosum*, *O. Rossi*, a splendid variety of *O. Cervantesii*, a grand *O. citrosimum* bearing eight spikes, and some beautiful *Masdevallias*.

At the cool end of the *Cattleya* house are some of the healthiest plants of *Odontoglossum vexillarium* I have ever seen. There are in all some two dozen plants, eighteen of which are what would be termed half-specimen and specimen plants, showing their flower spikes, three and four from a leaf, and the leaves of most of them possessing the rich rosy purple hue so peculiar to this *Odontoglossum* when in the highest state of luxuriance. Near them is a fine batch of *Odontoglossum Phalenopsis* and *O. Rozei*, both of which are evidently enjoying the treatment they receive. Mr. Clements apparently does not believe in trying to confine the roots of *Cattleyas* to the pots, judging by what is seen here, and the leaves assume the texture of boards.

The *Odontoglossum* house contains about four hundred plants, nearly two hundred of which are *O. Alexandræ* in various sizes, from recently imported pieces in small thumb pots to old-established and proved varieties with three and four breaks. There will be a beautiful show of flowers in this house of *O. Alexandræ* alone, as I counted nearly a hundred spikes in all stages of development. Particularly noticeable was a fine healthy piece of *O. cirrhosum* with over ninety flowers of good form and colour, a striking example of the floriferous character of this lovely *Odontoglossum*.

However successful Mr. Clements may be in the cultivation of East Indian and other heat-loving Orchids, the general appearance of the plants in the *Odontoglossum* house proves that he is not less so with the natives of cooler regions.—VISITOR.

HARDY PLANTS AT KEW.

OF all the departments in the Royal Gardens at Kew there is none which has more attractions for me during the spring and summer months than that devoted to herbaceous plants. In consequence, although I am a frequent visitor to our great national collection, I invariably bend my steps towards that portion of the Botanic Garden near the Richmond Road devoted to these humble members of the vegetable world. From March to September there is a constant succession of flowers, many possessing considerable beauty of form and colour, and some that are especially interesting for structural peculiarity or rarity. Some, it is true, are rather unattractive to a casual observer, and they are not unfrequently contemptuously designated "weeds." But gaudy colours are not all that make a garden enjoyable. I derive more really intellectual pleasure from a border of well-selected herbaceous plants, every one of which has a history, than I can from the most elaborately designed geometrical beds filled with brilliantly coloured *Pelargoniums*, *Lobelias*, and others of a similar character. So, as I am well aware that many persons have a similar taste to myself in this respect, it may be of interest to some readers of the Journal if I occasionally give them a few jottings concerning the plants most deserving of notice in the herbaceous grounds at Kew.

Kew is very widely known, but as these notes may possibly pass into hands of some who are unacquainted with the place it may be well to give an outline of the arrangement of the plants in the department under notice. The ground is oblong in form, with a path down the centre, and are laid out in a large number of beds of a similar shape in turf, the latter being kept very neatly cut. Of course there is much formality in the appearance of the beds, but the object is to group the plants according to their affinities—namely, in their natural orders, and not to form a merely decorative garden. The ground is separated from the other portion of the Botanic

Garden by a wall, to which are trained a number of rare and beautiful half-hardy shrubs, &c., and at its base a narrow border extends the whole length of the wall, entirely occupied with the order Iridaceæ. Commencing at the beds nearest the entrance we find on the left-hand side of the central path that the first are devoted to the highest orders of flowering plants, Berberidaceæ and Ranunculaceæ. Then follow the orders arranged under the divisions Thalamifloræ and Calycifloræ and part of Monopetalæ, a small rockery in the centre being occupied with the Saxifragæ, the Sempervivum, and Sedums. Returning to the upper beds on the right-hand side of the path the great order Compositæ, which comprises nearly a tenth of all known species of plants, is well represented, for it occupies almost a fourth of the ground. The order Labiatæ and others follow in the Monopetalæ, and so on through the Incomplete to the Endogæ, a large space being devoted to the Grasses. The Amaryllidaceæ and Liliaceæ are in beds at the upper end of the ground, and in a long border on the opposite side of the wall referred to above. A tank near the new laboratory contains the aquatic plants, and a few beds in front of the museum represent the chief plants of medicinal or economic value.

When recently visiting the Gardens the first plants to attract my attention were the Epimediums or Barrenworts, allied to the Berberis, but readily distinguished by possessing the parts of the flower in fours instead of in threes. Most of these are dwarf plants about a foot in height with irregularly lobed leaves and small panicles of flowers, and deserve to be more frequently seen in collections of herbaceous plants. *E. alpinum*, the only European species, is generally well known, but the variety *rubrum* is much more attractive, as the flowers are brighter coloured. One of the Japanese species, *E. muschianum*, is a pretty form with panicles of white flowers that are freely produced. The other species represented were *E. violaceum* with violet purple flowers, and *E. pinnatum* bearing yellow flowers, both attractive and contrasting well with those named before. In the order of Poppies the only plant noteworthy at the time of my visit was *Stylophorum japonicum*, which has rough pinnate leaves and yellow flowers somewhat resembling a large Buttercup. It is chiefly remarkable for the style that surmounts the ovary, a structural rarity in the Papaveraceæ, as the stigma is usually sessile on the ovary. Among the Fumariads the North American *Dicentra* or *Dielytra formosa* was very attractive, its dwarf compact habit and abundant rosy purple flowers rendering it worthy of a place in every garden. In an adjoining bed was a plant of *Ranunculus aconitifolius flore-pleno*, a well-known and pretty form, which bears the two very dissimilar popular names of Fair Maid of France and Bachelors' Buttons. Of the latter it has been very justly said that the flowers are "very suggestive of buttons, but only remotely so of bachelors." The leaves, as the specific name implies, resemble the Monkshood, but the flowers are pure white, very double, and of good form. The Globeflowers (*Trollius*) seem to be less grown than they merit, for the large yellow flowers appear to excellent advantage among other plants in moderately shady situations. The best of the species represented at Kew are *T. europæus*, with large globular pale yellow flowers (represented in the annexed engraving slightly reduced); *T. altaicus*, somewhat similar; and *T. asiaticus*, flowers dark orange yellow, very distinct from the others. *Anemone nemorosa Robinsoniana* was also flowering, it is a pretty variety of the common Wood Anemone with pale rosy lilac flowers, and should be obtained by all who patronise the somewhat fugacious Windflowers.

The beds devoted to the great and useful order Cruciferae contained many plants of decorative value, the most notable being the Aubrietias and Iberis. Of the former the best were *A. deltoidea Hendersoni*, with large deep violet purple flowers produced in profusion, and *A. deltoidea Campbelli*, similarly profuse but lighter in colour. Of the Candytufts the handsome *Iberis Garrexianna* was bearing its large corymbs of white flowers in great numbers. This fine plant is deservedly appreciated in gardens, but it is almost surpassed by *I. gibraltarica* in the size of the flowers. *Hutchinsia alpina*, a pretty dwarf plant for a rockery, was flowering freely, its small heads of white flowers contrasting pleasantly with the bright green foliage. *Alyssum saxatile* is too well known to need description, but there, as in other gardens, its bright yellow flowers so profusely produced rendered it most attractive. Passing from those beds there were few other plants in bloom except some *Doronicums*; but they were past their best, for their yellow flowers are some of the first to appear among the Compositæ early in the year. *Romanzovia sitchensis* was the only other

plant worthy of special note. It is an ally of the *Nemophilas*, but it resembles them but slightly in general appearance. The stems are recumbent, the leaves small and very dark green, the flowers being pure white and five-lobed. It is admirably adapted for a rockery, where it succeeds better than in the open border.—HERBA.

PRIMULA AMCENA VARIETIES AT NANCY.

IN the establishment of M. Lemoine at Nancy, France, may be seen a splendid collection of Primulas now in their full colours and height of perfection, and which raise the admiration of all beholders. Amongst them we notice *Primula Sieboldi* (*amcena* class); *P. Clarkiflora* (Lemoine), of a deep reddish crimson, and flowers produced very freely; also *P. vinciflora* (Lemoine) flowers imbricated and of medium size, deep violet with a white centre; *Alba lilacina fimbriata* (Lemoine), white tinted with lilac, flowers large and abundantly produced, very effective in a mass; also *P. lilacina marginata* (Lemoine), flowers French white, beautifully shaded and edged with a delicate lilac; *Viola* (Lemoine), very floriferous and of good shape, colour deep violet, white eye. *Gaite* is also worthy of notice; but particular attention must be drawn to *P. cortusoides amcena* (Veitch), which is certainly one of the best for early spring bedding and also for conservatories. The bed is 7 feet by 4, and is one mass of rich magenta crimson flowers with a pure white eye; this is undoubtedly the most effective dark variety. *P. c. lilacina* (Van Houtte) is also a splendid variety of a pleasing light mauve colour, very free and dwarf; *Rosalba* (Veitch), French white, reverse of petals light crimson, very free and effective; *P. c. alba grandiflora* (Lemoine) is a beautiful dwarf white variety, flowers large and pure; *P. cortusoides* (Lemoine), a beautiful light mauve, and is also one of the best for obtaining a mass of flowers; *P. c. purpurea* (Dean) is a large flower of a deep mauve colour; *P. lilacina perfecta* is a grand variety, flowers very large, white, beautifully marked with deep lilac; *P. minima* (Dean), flowers also large, of a whitish colour tinted and splashed rose, very free; *P. Beauté* (Lemoine), medium-size flowers, deep mauve, very pretty; *P. Fantaisie* (Lemoine), flowers of medium size, white ground, splashed with reddish crimson, very free; *P. Croix de Malte*, deep mauve, white centre, very free and floriferous, and it is as the name implies in shape of a Maltese cross, consequently making it very conspicuous. M. Lemoine has been busily engaged in hybridising all the best forms, and there is not the least doubt but that he will still further succeed in obtaining and sending out grand improvements on those already in commerce.—H.

ROSES IN LAST WINTER.

THE long and severe winter did not do my Roses much injury. Out of about 1500 in the beds less than thirty succumbed to the frosts; but many more than that number have been killed by the east winds of March and April. Of 710 plants put in since last September all are thriving except twenty-nine. My gardens are 800 feet above sea level, but they lie open and are well drained. Few Roses are killed by severe cold alone. Delicate Teas and some other tender varieties cannot endure frost; but these bear a small proportion to the multitudes grown in a garden of even a moderate size. However, when extreme cold has as allies ill-drained or damp subsoils, and above all the dense fogs of lowlands and close valleys, Rose plants suffer much, and many are killed. Under these conditions the most hardy shrubs will not survive the conflict. The hardiness of all plants is only relative. There is a point at which endurance gives way.

There is a Rose at this place trained against a western trellis which is never protected during winter, yet it has survived more than forty winters and still produces hundreds of blooms every year, yet there are those who will say that the Rose is not perfectly hardy. Well, I will admit that the Rose is not "perfectly hardy," yet in that sense all forest trees, even the sturdy Oak, are tender, and cannot be called "perfectly hardy."

Many of my Roses, after living through the severe frosts of winter without injury and making good spring shoots, have been cut down and killed by the alternations of cold rains and east winds with a temperature not below 30° in March and April. Dry frosts of 10° or 15° do not injure the plants during winter; but when the sap ascends and the buds begin to grow and the trees are bathed with cold rains, a slight frost carries havoc even among the most hardy. A great many more Roses are injured and killed in March and April than from the

beginning of November to the end of February; and the damage is greater in close foggy valleys and on low plains—the homes of dense fogs—than on open uplands.

I find that young plants, if the wood is well ripened, succeed much better if transplanted in October than in November or the spring. Hence for my gardens plants propagated in Devonshire grew much better than those from other districts. The wood is hardened earlier, and the shock is less to the constitution of the plant. Impressed with this idea, I shall in the coming autumn endeavour to obtain a few plants from the south of France, and I will carefully note the result and place it at your service.

I wish to advance the culture of the Rose in every garden.

To secure this end it will be well to promote the production by rosarians of hardy varieties which above all should preserve the perfume of the queen of flowers.—WM. SIMONS, *Merthyr*.

AUTUMN PEARS—ÉMILE D'HEYST.

NUMEROUS as are the Pears ripening during October and November, and difficult as it consequently is to make a small selection, yet this variety must not be excluded. It is a large, fine, and good Pear, that is not so widely cultivated as its merits deserve. It may not, however, thrive well in all soils, especially those very light and poor and those of the other extreme—strong and heavy, for the tree is rather a weak

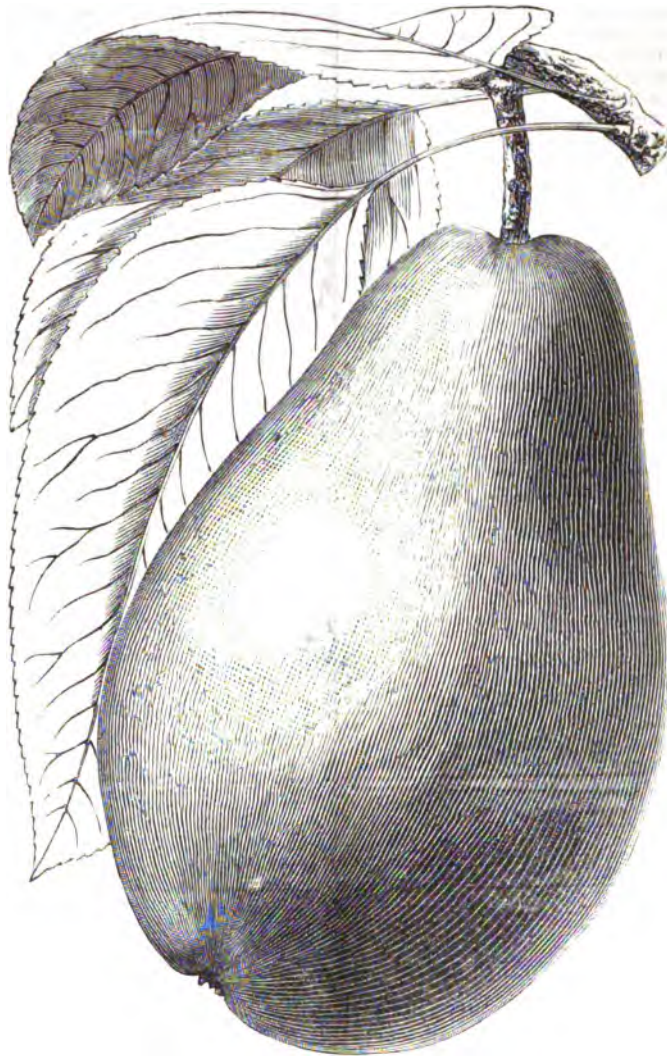


Fig. 56.—ÉMILE D'HEYST.

grower. In good Pear soils it succeeds well, and can scarcely fail to give satisfaction during the short period that it is in use. That it does not keep long is not a great fault, as there are so many other varieties to maintain a supply of fruit at its period of ripening. The tree makes a very good pyramid or natural bush, and it usually bears freely, sometimes heavily. The "Fruit Manual" contains the following description and information relative to this excellent variety:—Fruit above medium size, $2\frac{1}{2}$ inches wide, and $3\frac{1}{4}$ long; oblong pyriform, undulating in its outline. Skin bright yellow when ripe, marked with patches and veins of cinnamon-coloured russet. Eye small, set almost even with the surface, and sometimes quite prominent. Stalk about an inch long, set in a narrow uneven cavity. Flesh tender, very rich, buttery, and melting,

juicy, exceedingly sugary, sprightly, and with a fine rose-water perfume. A most delicious Pear. Ripe in the end of October, but does not keep long, as it soon rots at the core. The tree is rather a weak grower, and bears well. It was raised by Major Espéren of Malines, and named in honour of M. Emile Berckmans of Heyst-op-den-Berg, who continued the collection of M. Espéren.

CYPRIPEDIUM EURYANDRUM.

THIS is one of the many handsome and distinct hybrid Orchids that have been produced at Messrs. J. Veitch & Sons'. It was raised by Mr. Seden from crossing the free-flowering and useful species, *Cypripedium barbatum*, with pollen from the

beautiful *C. Stonei*. The result was a form quite intermediate in character between the two species, and possessing a large share of the attractions of each. The hybridity is especially noticeable in the petals, which, though considerably longer

than those of *C. barbatum*, are yet proportionately shorter than those of *C. Stonei*, and the colouring is shared in an equal degree. The labellum has a near resemblance to that of *C. barbatum*, but differs in the greater size it attains. The obtuse

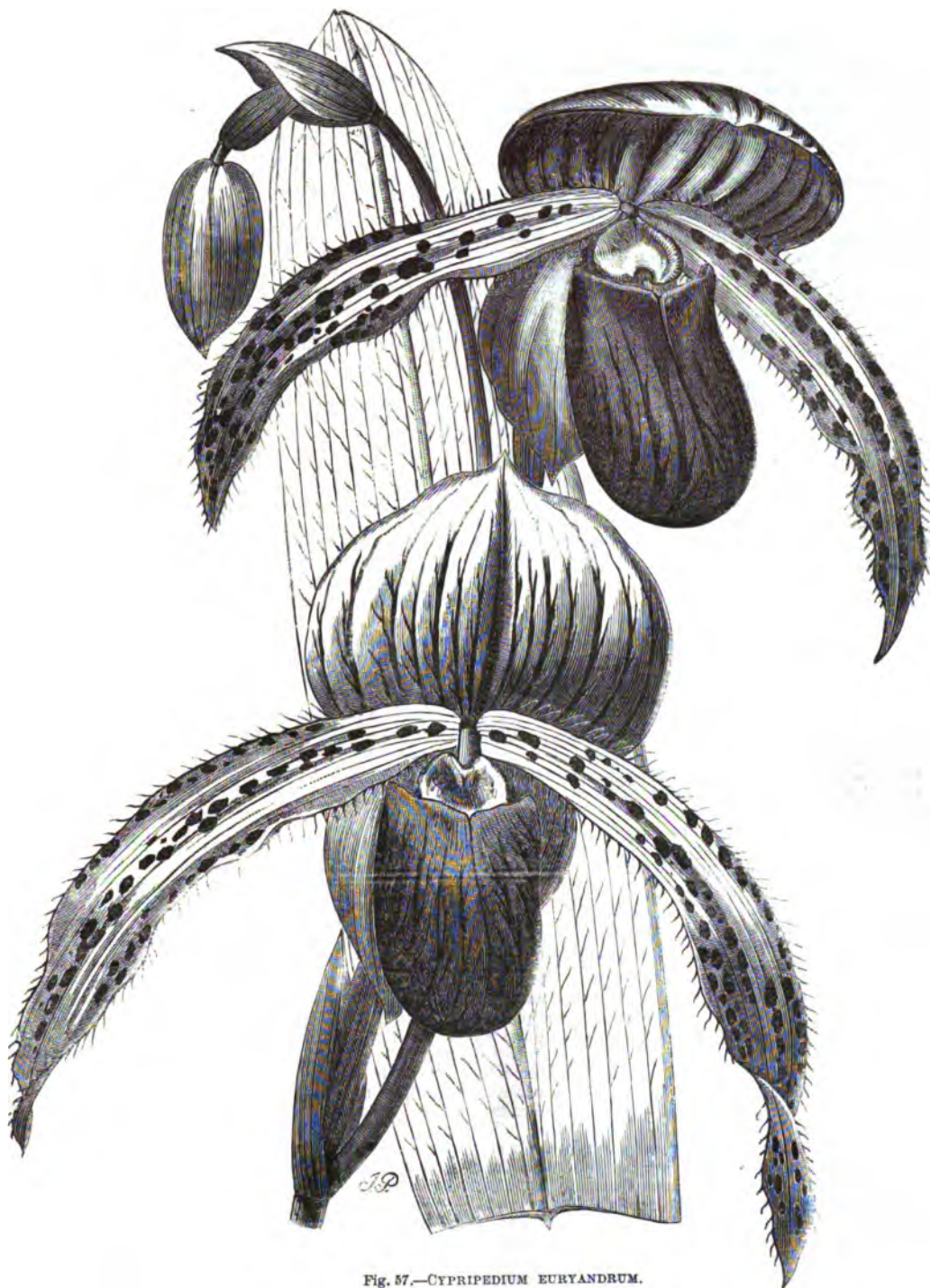


Fig. 57.—*CYPRIPEDIUM EURYANDRUM*.

upper sepal—tinged with crimson, striped with green and black—also imparts a very distinct attractive appearance to the flower. The petals are fringed with hairs, and bear on the upper surface numerous peculiar wart-like protuberances, while the labellum is dark-coloured, crimson and brown shades being combined. The foliage is also handsome, being of rich deep green, in which an approach to tessellating is faintly

visible, and the plant is of vigorous habit, flowering freely, with similar treatment to that required by other *Cypripediums*. The annexed engraving, supplied by Messrs. Veitch, represents the plant admirably.

CLIANTHUS PUNICEUS IN CORNWALL.—This beautiful plant is quite hardy here. A specimen is now in full bloom near

prize for hose-in-hose Oxlips and Polyanthus, which also found a host of admirers.

Never was a show more greatly admired than this, and the crowds enjoyed in the most commendable manner the great treat afforded them. The Show was well managed by Mr. Barron, and Mr. Diak and other officials of the Society exerted themselves to render the affair what it decidedly proved to be—a great success.

TOO-MUCH-ALIKE ROSES.

I SAID in the *Journal of Horticulture* (page 351) that I would continue my remarks about the similarity of Roses, and I do so now. Mr. George Paul, who drew attention to the subject, has no doubt more facilities than most persons to compare Roses accurately. I agree with his list to a certain extent, but I am more inclined to go as far as Mr. Baker of Reigate, who says he never saw two Roses precisely alike, except *Devoniensis* and *Climbing Devoniensis*. I have not had sufficient trial in my own garden of some of the Roses named. With me *Maurice Bernardin* and *Ferdinand de Lesseps* are very nearly alike, but *Exposition de Brie* is decidedly different. *Marguerite Brassac* is not so strong a grower, and in my opinion will never be so fine a Rose as *Charles Lefebvre*, though no doubt of the same parentage. *Mdlle. Eugénie Verdier* and *Marie Finger* are no doubt in most persons' estimation much the same; but, again, with me *Mdlle. Eugénie Verdier* is the best. Not caring much about *Reine du Midi* I never obtained *Madame Alice Dureau*, as I thought them too much alike when I saw the latter for the first time, but neither of them comes up to my idea of exhibition Roses. *Madame Boutin* is with me a distinct Rose from *Christine Nilsson*. I do not know, or at all events cannot recall, *Avocat Duvivier* to my memory, so cannot judge of its similarity to *Maréchal Vaillant*, which is with me on the *Manetti* a strong, healthy, and free grower and bloomer. I take Mr. Paul's list in its order. *Baron de Bonstettin* has not been sufficiently tested yet in my opinion. No doubt *Louis Peyronny* and *Lælia* are much alike, but I am almost sure I should know them apart in a stand, and certainly in twenty-four trebles I would not pass a bloom of *Lælia* added to make up three *Louis Peyronnys*. That good old Rose *Madame Clemence Joigneaux* has far too marked characters of its own in my opinion for *La Souverain* to be identical with it. *La Rosière* is a better grower and bloomer than *Prince Camille de Rohan*, though they would be difficult to distinguish in a stand if misnamed or a casual duplicate put in. I do not know *François Fontaine* sufficiently accurately to decide between it and *Senateur Vaisse*.

I am inclined to leave Mr. Paul's lists of Teas alone, as he has so much better opportunity of deciding than I have. I agree with him that *President* and *Adam*, *Alba Rosea* and *Madame Bravy*, are very much alike. *Belle de Bordeaux* is only another name for *Gloire de Bordeaux*. *Niphetos*, too, is very like *Mathilde*, but the latter has more petals when well exhibited.

Now as to the supplemental list on page 290. I do not know the following sufficiently well—*Villaret de Joyeuse*, *Madame Hunnebell*, *Mrs. Bellenden Kerr*, *Virgil*, *Avocat Duvivier*, *Velours Pourpre*, or *Madame Hugard*. *Baronne de Maynard* and *Boule de Neige* no doubt are much alike when cut, but the latter is a stronger grower and is a more perpetual flowerer. *Leopold Premier* and *Lord Beaconsfield* are not sufficiently alike to be classed as one, though both were premiers! *Duchesse de Caylus* is a decidedly distinct Rose, so is *Antoine Ducher* and *Senateur Vaisse*; *Alice Dureau* is at times like *La Reine*. *Sultan of Zanzibar* is classed with the Duke of Edinburgh and also with *Reynolds Hole*. The Duke of Edinburgh is very distinct from either, and it is very seldom that the *Sultan of Zanzibar* and *Reynolds Hole* could be so much alike as not to be detected, except it might be in collections of forty-eights or seventy-tvos. Beauty of *Waltham* may easily be mistaken when cut for *Madame C. Crapelet*, from which it was most probably a seedling. *Jules Margottin* is too well known to be coupled with *Madame Louise Levêque*, or *Comte de Nanteuil* with *Marquise de Lignières*. *Prince Camille de Rohan* is like *La Rosière*, but I should have said sufficiently distinct from *Edouard Dufour*. *Pierre Notting* with me has quite a character of its own. *Marguerite de St. Amand*, *Duchess of Edinburgh*, and *Princess Mary of Cambridge* are stated to be the same; but as *Madame St. Amand* has always a lilac tinge in the pink, and *Duchess of Edinburgh* is a different shaped flower to *Princess Mary of Cambridge*, the difference is quite enough for any accurate eye.

I repeat what I said about *Fisher Holmes* and the Duke of

Wellington, which I have growing in three places in one roseray, and always find the Duke of Wellington the brightest, while *Fisher Holmes* is the stronger grower and a most useful garden and exhibition Rose. It amuses me for anyone to call *Alfred Colomb* and *Marie Baumann* the same. If *Marie* would only hold her head up as well as *Alfred* more might be said for her as to her growth, but I still maintain there is hardly a Rose to excel *Marie Baumann* yet. *Dupuy-Jamain* I see is classed with *Auguste Rigotard*. I remember the first twelve blooms I saw of *Dupuy-Jamain* at the Show at Birmingham, and certainly as yet *Auguste Rigotard* has not come up to it.

I should rather like to have a sub-committee of some eighteen to twenty rosarians of the National Rose Society—names to be chosen at the next meeting of the National Rose Show Committee—and to have a certain number to form a quorum at any large Rose show to decide this sort of question of too-much-alike Roses by carefully comparing blooms properly named and exhibited. I hope the suggested meeting after the Crystal Palace Rose Show under the auspices of the National Rose Society may be carried out; a subject like this might be well discussed then if arrangements were made for a dinner in the eastern annex half an hour after the public were admitted to the Show.—C. P. PEACH.

LEAF SOIL VERSUS COW DUNG FOR PLANTS IN POTS.

"D., Deal," (page 361) recommends "well-rotted cow dung" and leaf mould for *Auriculas*. I do not believe in either substance for growing anything. I regard leaf mould as merely taking up room which could be better filled. It doubtless helps to make a "cabbagy" growth, but that is about all that can be said in its favour. Either cow dung, horse droppings, or sheep's droppings, when used in the proper condition, are invaluable, but they must not be "rotted." Cow dung, for instance, should be used in as fresh a condition as possible consistent with its being workable; this is when it is in a moderately dry state—just dry enough to rub down into a rough mould, without in the one case "claying" through being too wet, or in the other remaining lumpy through having become too dry. Either of the above manures so prepared require no leaf mould added to the compost, of which they may form component parts. I do not say anything as to the note as regards *Auriculas*, merely wishing to point out the best way of using cow dung for pot plants.—R. P. BROTHERSTON.

REVIEW OF BOOK.

The Potato Disease, and How to Prevent it. By FREDERICK BRAVENDER. London: 81, Great Queen Street.

THIS extremely neat and well-printed little volume of eighty-three pages is worthy of a place in the gardener's library—not because the author describes any new discovery for preventing the Potato disease, nor indeed submits a clearly defined mode that will be generally admitted as effecting with certainty that much-desired object, but because he has collected from various sources a great amount of information relative to the subject which has hitherto been scattered over a wide field of literature.

The origin of the disease is still left in obscurity, but its spread is traced from America, where it was established in 1843; broke out in the Isle of Wight in August, 1845; and spread to all parts of Great Britain, and simultaneously in other countries of Europe; also at the Cape of Good Hope, and the year following in Australia. The manner of its progress is not so clear, being to a great extent conjectural, but the probabilities indulged in are founded on close reasoning, and are concisely stated. Consular reports on the spread of the murrain are collated, the various theories relating to it of English, French, German, and American origin are advanced and examined, and examples of its working and prevention are adduced. In reference to one theory, that of electricity, our old contributor Mr. Robert Fenn will be a little amused, as that gardener and indefatigable Potato raiser and cultivator did not succeed his lamented employer as Rector of Woodstock and become "Rev. R. Fenn." With this exception the book is singularly free from errors. It is not our intention to discuss the several theories alluded to, preferring to leave readers of them to effect in the best way they can a reconciliation of the conflict of ideas; and we are not sure that the author's comments, well considered as they manifestly are, will enable them

to arrive at a satisfactory conclusion on what may be termed the philosophical division of the subject.

Throughout the practical part of the volume many useful suggestions are scattered, and good advice is given; some of it, however, not easy, nor likely to be carried into effect. The chapter on the prevention or mitigation of the disease opens with a letter which the author first had published in the *Times*, followed by another from Mr. Everard, the former indicating how labourers may have sounder crops, the latter instancing that diseased tubers have produced a crop free from the murrain, while sound sets produced a diseased crop. These letters are commented on, but the author does not give a clear solution of the circumstance just cited. We have more than once tried the same experiment, with the same apparently strange results; but as the slightly diseased seed has always matured its poor but sound crop earlier than the other it has escaped the heavy rains and warm moist atmosphere that affected the later plants. The crops, however, raised from diseased seed, though sound, have been practically worthless. Some of the plants scarcely made any growth, and others formed tubers without any tops at all. They simply escaped the disease because they were early.

Potato haulm, says the author, ought to be "burnt or buried, not thrown on manure heaps." This is safe advice, and appears theoretically sound; but the Potato disease baffles theory. We have adopted the practice denounced, and the following year had sound crops from ground on which the manure had been used, while in other years have had diseased crops from land that had none of the manure, yet we do not dissuade anyone to disregard the above advice. We once had an opportunity of planting Potatoes on a plot that had never been planted with them before, for the erection of the old buildings which were removed was anterior to the introduction of the tuber by Sir Walter Raleigh. No manure of any kind was applied, but special care was taken to cart the fresh soil for planting them in from a venerable Oak wood, a relic probably of the primeval forest. The tubers planted were sound. The site was low and wet, and drenching rains occurring with a high temperature the crop was ruined; but in one portion of the plot some loads of the sandy soil from the wood were not spread. These were formed in cones, and planted also, and the crop was sound; the superfluous moisture passed away freely, and hence their freedom from the murrain. Neither manure in the one case nor the disease germs in the seed in the other affected the results of this experiment, for no manure was used, and all the sets came from the same heap.

The author strongly urges labourers to grow more vegetables, such as Savoy and other greens, and "cannot understand why they do not plant a good supply of Broccolis for spring use." We think it is because Broccolis over a vast district of the country are as uncertain as Potatoes. They exhaust the ground of manure, and are then killed by the frost. Yet more vegetables should be grown in cottage gardens, especially Parsnips, which are the most reliable and best substitute for Potatoes.

Pulling up or cutting off the tops when the tubers have attained a good size, and before the appearance of the blight, is recommended, and an instance is cited of success attending the operation when the tops had been pulled. We could adduce others, but we have never found that cutting off the tops is by any means equal to drawing them, and we have tried the two plans with alternate rows. If the disease has stricken the crop before removing the haulm the time spent in that removal is wasted.

As an instance of the difficulty of determining the cause of the liability to the murrain of different varieties, we observe that Paterson's Victoria is considered prone to disease because its tubers are produced in a cluster close to the stem; but it is stated on another page, in a translation from the French, that remarkable disease-resister *Magnum Bonum* forms all its tubers close round the stem in a very small space! The observations on the cause of immunity from disease of such varieties as the one named and Scotch Champion appear more cogent, and are worthy of reference. The author believes it arises principally from the mycelium of the fungus not being able to readily traverse the cell walls of the plant on account of the stems being of a hard woody nature. He further observes that "we do not possess, that I am aware of, a thoroughly good disease-resister second early, and a small fortune awaits the fortunate individual who succeeds in raising an early *Magnum Bonum*; but the raiser ought to get a good stock in hand before he parts with any. The most likely way I know of securing the desired object would be by raising a very large number of seedlings from

Magnum Bonum without the aid of any cross." In reference to obtaining disease-resisting varieties it is suggested that State aid should be granted, which we fear will not be done readily. "The Government ought to assist with a grant of money, and might with advantage offer the following prizes:—£200 for a Potato entirely resisting the disease; £100 for a Flourball of better quality; £100 for an improved Norwegian; £100 for an improved Champion of Scotland; £100 for an improved Skerry Blue; £100 for an earlier variety of *Magnum Bonum*. The award of these prizes might be left to the decision of the Royal Horticultural Society, if they would undertake the management of the fund. If these prizes were offered new and improved varieties of Potato would soon be forthcoming, an advance on those now in cultivation, and render us almost independent of the disease; and if, as I think can be done, some were obtained which could be grown entirely free this would be one way of preventing the Potato disease."

Modes of stamping out the disease are submitted, which are still less likely to be carried out. Directions for growers on a large and small scale are given and examples of culture cited. The cost and profit of Potato culture is referred to, the dry rot of *Martius* is noticed, with much more matter worth reading that we cannot particularise, and a short summary of recommendations for securing better crops.

The author, who is one of our esteemed correspondents, has been impelled by a laudable desire to render the most important of all root crops more certain and profitable. He has grappled boldly with a subject that is admittedly difficult, and has with much labour and research prepared a volume that may be read with advantage by landed proprietors, clergymen, gardeners, farmers, and labourers—indeed by all who are engaged in the culture of this indispensable esculent. If they do not find a panacea for the destructive malady they will at least possess a good record of it, and find many useful hints and suggestions directed towards the production of sounder crops.

THE WEATHER.

NEVER have I known those tree proverbs more exactly verified—

"Oak before Ash,
Have a splash.
Ash before Oak,
Have a soak."

Here, in Mid-Surrey, we have had scarcely "a splash" of rain for weeks, and would almost welcome now a day or two of last year's ceaseless "soak."

There is another saying:—

"If the Oak before the Ash comes out
There has been or there will be drought."

Our Oaks all about are abundantly out in leaf, whereas the Ash hardly makes a sign.

"As black as Ash buds in the front of May,"

sings Mr. Tennyson, that very close observer of Nature; and black Ash buds there may be, but not a sign of a leaf, while as for the Roses "the survival of the fittest" proceeds merrily on. I have to keep carrying away victims which the dry weather and the Rose weevil have finished between them. "The fittest" Teas to survive are rapidly decreasing their number. I am glad to observe, however, that Hybrid Teas come out of the winter well. I expect my first outdoor bloom in a day or two will be the new red *Gloire de Dijon*, *Reine Marie Henriette* with its estimable parent by way of a good second, and then *Céline Forestier* against a wall. In the open, as I suppose with other people, the N.E. and the caterpillars have it all their own way. I have seldom seen Roses look worse, at this their worst time, either on standard or *Manetti*. I hear that *Reigate* is doubting about its show day, and no wonder, for who can say what weather we are to have before June 26th? The N.R.S. seems to have secured the very worst day—July 3rd. Does anyone know whether the *Alexandra Palace* will resuscitate itself in time this year to have its exhibition?—A. C.

GIANT EMPEROR AND BROMPTON STOCKS.—As an illustration of the comparative mildness of 1879 as compared with 1878 in this locality, I may note that the most striking objects in my herbaceous borders at present are very tall (2 feet high) crimson, lilac, white, pale flesh, and various-coloured double specimens of the above. They were out the whole winter, and unprotected except by the avenue walls from harsh north and

cast winds. For brilliancy they divide the honours with scarlet *Anemone coronaria* and the various bright shades of Giant French *Ranunculus*. Last year at this time I had not a Stock left after the winter of 1878—Brompton, Emperor, Queen, &c., all were reduced to a pulp by the frost.—W. J. M., *Clonmel*.

ROYAL BOTANIC SOCIETY'S SUMMER SHOW.

MAY 19TH.

THE customary beautiful display of plants and flowers at the first summer Exhibition of this Society again greeted the numerous visitors to the Gardens. The exhibits were numerous, and generally of excellent quality. Azaleas were in several collections very profusely flowered. Stove and greenhouse plants were well represented; but the chief features of the Exhibition were the handsome groups from Messrs. Veitch, Bull, Williams, and Henderson; the enormous specimen Roses from Messrs. Turner and Paul, with the grand collections of Orchids. The large groups and the Orchids occupied the crescent-shaped stands in the centre of the marquee, the Roses and other plants being placed on the slopes round the sides. The tasteful combination of brightly coloured flowering plants with the green shades of Ferns, Palms, and others were, as usual, highly creditable to Mr. Coomber's skill, and we only regret that the limited time at our disposal did not allow us to report the Show more fully.

STOVE AND GREENHOUSE PLANTS.—The principal class was for twelve, open to nurserymen only, and in that Messrs. T. Jackson and Son, Kingston, were placed first, their collection including handsome well-trained specimens of *Aphelexis macrantha purpurea*, *Boronia pinnata*, *Pimelea Hendersonii*, well flowered, and *Anthurium Schotterianum*, with large deeply coloured spathes. Messrs. B. Peed & Son, Norbury Nursery, Lower Streatham, followed with fine specimens, *Dracophyllum gracile* being remarkably large and well flowered. In the amateurs' class for six specimens the chief prize was secured by Mr. W. Chapman, gardener to J. Spode, Esq., Hawkeyard Park, Rugeley, with a collection of exceptionally vigorous and well-flowered specimens. *Statice profusa* was of enormous size, *Acrophylum venosum* and *Ixora coccinea* being also very fine. Mr. J. Child, gardener to Mrs. Torr, Garbrand Hall, Ewell, was awarded the second prize for smaller plants, but otherwise good and healthy. Mr. George Wheeler, gardener to Lady Louisa Goldsmid, St. John's Lodge, Regent's Park, was placed third with fair specimens; and an extra prize was awarded to Mr. J. Weston, gardener to D. Martineau, Esq., Clapham Park, for neat plants. The best nurserymen's collection of six were from Messrs. Jackson & Son, even and healthy plants, *Hedera tulipifera* being extremely fine. Messrs. B. Peed & Son were second with smaller but healthy plants. In the corresponding amateurs' class Mr. Chapman was in the chief position with remarkably handsome plants, *Erica Cavendishiana* being grand.

ROSES.—These were grandly represented by collections from Mr. Charles Turner of Slough, and Messrs. G. Paul & Son, Chesham. The former exhibitor was awarded the chief prize in the class for nine distinct varieties. His enormous specimens were in superb condition both as regards vigour, number, and colour of blooms. Charles Lawson was magnificent; *Juno* nearly equally fine; Victor Verdier, profusely flowered and very even; Edouard Morren also extraordinarily beautiful. Mr. Turner was also placed in the chief position with twenty specimens of medium size but very compact, healthy, and bearing good flowers. Madame Lacharme, Duchesse de Vallombrosa, and Charles Darwin were among the most noticeable of the plants. Messrs. Paul & Son were second with nine but little inferior to Mr. Turner. Anna Alexieff, magnificent; *Souvenir d'un Ami*, Dr. Andry, and Madame de St. Joseph were also extraordinary.

AZALEAS.—Mr. Charles Turner exhibited the finest collection of twelve very symmetrical, well-flowered, and extremely bright, *Duo de Nassau* and *Cedo Nulli* being especially so; Messrs. Ivery & Son, Dorking, followed closely, but with less profusely flowered plants. Mr. Child had the two best collections of six, including several remarkably well-flowered specimens, notably *President* and *Iveryana*. Mr. Wheeler was a good average second with moderately vigorous specimens. Mr. Turner also first with six varieties of similar quality to his other plants. Messrs. Jackson followed with not nearly such well-flowered specimens, but symmetrical.

ORCHIDS.—A magnificent bank of these was arranged, comprising very large vigorous specimens, profusely flowered, and with the colours finely developed. The best amateurs' twelve was from Mr. H. Heims, gardener to F. A. Philbrick, Esq., Q.C., Avenue Road, Regent's Park. *Cattleya Mossiae magnifica* was very fine, *Dendrobium thyrsiflorum* with fourteen spikes, *Thunia Marshallii* and *Odontoglossum Alexandrae* also beautiful. Mr. J. Ollerhead, gardener to Sir H. W. Peck, Bart., Wimbledon House, was an admirable second. *Cypripedium barbatum nigrum* had over three dozen flowers, *Odontoglossum vexillarium* finely coloured and very large, and *O. Alexandrae* with large flowers of good colour. Mr. Douglas, gardener to F. Whitbourn, Esq., Loxford Hall, Ilford, followed; *Calanthe veratrifolia*, *Masdevallia Harryana*, and

Cypripedium villosum being well represented. Mr. B. S. Williams, Holloway, was first in the nurserymen's class with admirable specimens of *Masdevallia Harryana splendens*, remarkably richly coloured, *Lælia purpurata* in excellent form, *Cattleya Wanae* magnificent, *Cypripedium barbatum superbum* with thirty good flowers. Messrs. Jackson & Son were placed second with small but good specimens.

Only two collections of *Pelargoniums* were exhibited, but they were both good. Mr. J. Wiggins, gardener to H. Little, Esq., Birlington House, Uxbridge, was first in the amateurs' class with very even specimens and well flowered. Rob Roy, Hermit, Kingston Beauty, and Claribel were the best. Mr. C. Turner's specimens were of similar fine quality, for which the chief prize in the nurserymen's class was awarded. Highland Lassie was very beautiful, Claribel exquisite, and Prince Leopold very bright. Fine-foilage plants were well shown by Mr. B. S. Williams, Mr. Douglas, and Mr. Wheeler, who gained the chief awards. The best Heaths were exhibited by Messrs. Peed and Jackson.

Extra prizes were awarded to all the following exhibitors:—Messrs. J. Veitch & Sons, Chelsea, for a magnificent group of Roses and Acers, that formed one of the great attractions of the Exhibition. Mr. B. S. Williams contributed an extensive and tastefully arranged group of new and beautiful plants, including flowering and fine-foilage plants. Messrs. E. G. Henderson & Son, Pine Apple Nursery, Maida Vale, also sent a large collection of new and rare plants, including many choice species and varieties of considerable merit. Mr. William Bull staged a handsome group composed of clusters of *Odontoglossum vexillarium*, *O. Alexandrae*, *Epidendrum vitellinum majus*, *Dracaena Goldiana*, and other flowering and fine foliage-plants. Messrs. James Carter & Co. sent a large collection of *Coleus* and other plants. Messrs. Hooper and Co. exhibited a group of miscellaneous plants. Messrs. Osborn and Son, Fulham Nurseries, sent a large group of stove and greenhouse plants. Messrs. J. Laing & Co., a large collection of fine-foilage plants, *Begonias*, and *Calceolarias*. Mr. C. Turner a group of new Roses in pots. Messrs. Dobson & Sons, Isleworth, for a collection of excellent *Calceolarias*; flowers of good form and bright colours. Mr. J. W. Wimsatt, King's Road, Chelsea, for five boxes of beautiful cut Roses and a group of plants. Messrs. Ivery & Son sent a pretty group of Ferns and Azaleas, and Mr. Wheeler sent a collection of Ferns, Palms, and flowering plants.

During the afternoon a large and fashionable company assembled, great satisfaction being generally expressed that the Exhibition had proved so successful.

PARAFFIN AND ROSES.

I HAVE had an evening's rumination on the above after reading with renewed interest the correspondence in vols. xxxvi. and xxxvii. of the *Cottage Gardener* upon the uses and abuses of paraffin as an insecticide. I am still undecided as to its uses and abuses as an insecticide with regard to Roses, and shall be grateful for information upon the following points:—

1. Can you publish any case where it has been used on Roses, and with good results?
2. Can its use be recommended for Roses, say a mixture of one wineglass of oil to two gallons of water?
3. Would it destroy caterpillars? or would it be preferable to dust the plants with hellebore in preference?
4. In case it is used, is it necessary afterwards to syringe the plants with clean water?
5. Is there any possibility of the oil dripping off the plants and injuring the roots?
6. When is the best time to use it, night or morning?—THOS. LAMBERT.

[We will readily publish replies to these questions from those who can communicate their experience.—EDS.]

WORK FOR THE WEEK.

HARDY FRUIT GARDEN.

AN abundant crop of Gooseberries and Currants appears to have survived the frosts and easterly winds, and may now be considered as safe. Although the bushes may now appear clear of insects they should be frequently examined, and whenever caterpillars make their appearance they should be dusted with fresh-ground hellebore powder, selecting a calm evening or morning when the leaves are moist with dew. Though the powder is poisonous the rains will wash it off the fruit before the latter will need to be gathered for culinary purposes. Strawberries promise an abundant crop, and should be well mulched with littery manure to allow of its being washed by rains, and thus form a clean bed for the fruit to lie on. Chopped straw is probably the best material for this purpose, because it keeps the fruit clean and checks evaporation. The Strawberry in well-drained soils is not easily overdone with water at any time, and requires it abundantly when the fruit is swelling. Drought is fatal to a full crop of fine fruit. Plants which have been forced may be

planted out if ground is available. Make the soil firm about the roots and water thoroughly until the plants are established; runners being removed and kept clear of weeds. A moderate crop of fruit may be produced this year if the autumn be favourable. They rarely fail to produce an abundant crop the following season. Continued attention must be given to disbudding Peaches and Nectarines, and to stopping and regulating the young shoots of Apricots; but this should be done at intervals, so as to avoid giving an undue check to the trees. If there be the least trace of aphid on Peaches and Nectarines promptly apply an insecticide, tobacco water applied with a syringe during calm evenings being most effectual. Keep an eye on Apricots for caterpillars, destroying them by squeezing the infested leaves between the finger and thumb. Plums and Cherries, both of which promise an abundant crop of fruit, should have a good washing with the garden engine so soon as the fruit is fairly set, and if the trees are at all infested with insects the washing must be frequently repeated, applying tobacco water as advised for Peach trees. Disbud and regulate the young shoots of Vines trained against walls in the open air, and if mildew appear dust with sulphur. Mulch recently planted fruit trees with about half-decomposed manure, and if dry give them a good watering.

FRUIT HOUSES.

Vines.—The weather lately has been so cold as to render sharp firing absolutely necessary for the maintenance of the proper temperature, and this with the bright days has necessitated considerable attention in damping to prevent an uncongenial condition of the atmosphere, which is sure to be followed by attacks of red spider, particularly if there is any deficiency of moisture in the internal borders. Close early to lessen the necessity for fire heat, as with sun heat and plenty of atmospheric moisture the temperature may run up to 90° or 95°, which will do more to advance the crop than firing in dull weather. These remarks apply only to Vines in full growth, as those with the fruit ripe or nearly so will be better kept cooler. Air should be admitted in the morning as soon as the sun shines on the glass. The sun causes scorching unless air has been previously admitted to expel the condensed moisture formed on the foliage during the night. Late Vines coming into flower should have a minimum temperature of 70°; when in flower the rods should be shaken several times a day to assist fertilisation by distributing the pollen. With shy-setting kinds it is advisable to go over the bunches with a camel's-hair brush, employing pollen from free-setting kinds. When in flower discontinue stopping; but to prevent overcrowding pinching must be again resorted to as soon as the fruit is set, allowing no more foliage than can be exposed to light, it being ruinous to allow growth to be made and afterwards be compelled to remove it in quantity. Keep ripe Grapes cool, and do not allow the atmosphere to become parching dry nor the internal border to get dried and cracked. Vines struck from eyes in February and grown on in turves or pots may now be planted out in properly prepared inside borders, to which the roots should be confined until they have extended through the soil, when they may be allowed to extend to the external border. To allow of this arches should be formed in the front wall of the house, and walled up to confine the roots to the internal border until required to admit of their passage outside. After planting give a good soaking with water at 90° to 100°, and mulch with about 2 inches thickness of short manure. Maintain a humid atmosphere, and shade from bright sun until established. If fruit is required for next season it must be taken from supernumeraries, which should be planted between the permanent Vines, these being allowed to make as much growth as possible, the supernumeraries having the laterals stopped at the first joint and the leader pinched out at 8 to 9 feet of growth. Keep the lateral growth closely pinched through the summer and the principal leaves fully exposed to light. With good treatment the laterals will give a good crop of fruit next season, and the Vines should then be removed.

Melons.—Carry out previous directions relative to plants ripening their fruit. When the fruit is all cut from a plant make choice of strong shoots from the base of the trellis, and cut the plants back to those, training them in place of the growths removed. Fruit will show and set freely upon the sub-laterals, but it does not swell so well as that afforded by fresh growths; besides, cutting away the old growths is a ready way of freeing them of red spider, which is most frequent on the old foliage. Keep a moist atmosphere, and remove some of the surface soil, adding fresh lumpy compost, making it moderately firm, and give a good watering with weak liquid manure. Unless the plants show a disposition to grow freely after fruiting they are best rooted out, then start afresh with young plants and new soil, which will give much better results than old plants weakened by previous cropping and attacks of insects. Maintain a drier atmosphere and slightly higher temperature to plants setting the fruit. Fertilise the female blossoms daily as they become fully expanded; stop one or two joints beyond the fruit, taking care not to allow one or two fruit on a plant to have the lead of the rest. Earth-up the plants directly the fruits begin to swell-off, using rich compost, pressing it down firmly, and give a good watering. Syringe moderately on warm afternoons, and keep the growths well regulated by fre-

quent attention to stopping and thinning. In pits and frames fruit in a forward state should be well exposed to the sun; those set and swelling should be placed on slate to keep them from the soil. Sow for succession as required.

Cucumbers.—There must not be any neglect in thinning out the foliage and exhausted growths, as the regularity of the supply depends upon these precautionary measures. Stopping and training must also be regularly attended to. Do not overcrop, nor allow the fruits to hang longer than is needed; they will not only be useless but weaken the plants. Moisture both at the roots and in the atmosphere must be supplied in abundance, especially in hot weather. Shade only as much as will prevent flagging. Fire heat will still be necessary at night and on dull days, but dispense with it as much as possible. Close the house early in the afternoon with plenty of moisture, and syringe the plants moderately at the same time. Sow for succession, and utilise pits and frames as fast as they become cleared. A moderate bottom heat is still advisable to give the plants a start.

ORCHARD HOUSE.

As the Peach, Nectarine, Cherry, and Plum trees are subject to the attacks of aphid they will require to be syringed every evening after the fruit is fairly set, as it now is. If the nights are likely to be unusually cold the trees should be syringed early in the afternoon that the foliage may become fairly dry before nightfall, but syringe early in the morning if the day is likely to be fine. This persistent syringing with clear rain water will generally keep the foliage free from insects; but if not, the house should be fumigated with tobacco paper, being careful that the foliage is dry and not to give an overdose. Examine Apricot, Cherry, and Pear trees for caterpillars, squeezing any folded leaves between the thumb and finger. In fine weather the ventilators should be opened between six and seven o'clock in the morning and closed at five to six o'clock in the afternoon according to the weather. Abundance of water will be required by trees planted out and in pots, and a good surface dressing of rich material should be given to trees in pots carrying heavy crops of fruit, also to those planted out and not growing freely. Besides encouraging surface-root-action, the top-dressing tends to check evaporation, and promotes greater regularity of moisture, in addition to manual matter carried down by the watering to the roots. Over-luxuriant trees in pots may easily be checked by raising them on bricks instead of allowing the roots to penetrate too freely into the border on which the pots are usually stood. Over-luxuriant shoots should be rubbed off, and to insure as far as possible uniform development and the symmetry of the trees, those growing irregularly should be stopped. Avoid overcrowding the growths, it being essential that the foliage have air and light freely. Thin out the fruit of Apricots, Peaches, Nectarines, Cherries, Plums, and Pears if necessary; but in every instance it is advisable to wait until it is seen which fruits take the lead in swelling, and then the smaller fruit may be removed by degrees. A moderate crop of fine fruit is much preferable to a heavy one of inferior quality, and the wood for future crops has a chance of being early and well ripened. Stop or pinch out most of the points of the shoots of Fig trees, and rub off any shoots likely to render the trees too crowded. Disbud Vines as soon as the most promising shoots can be distinguished, leaving one only to each break.

PLANT HOUSES.

Stove.—Small young plants of Allamandas, Bougainvilleas, Clerodendrons, Gardenias, and similar free-growing plants that were potted early, must not be allowed to become rootbound. Bougainvillea glabra and Clerodendron Balfourianum when in flower are fine conservatory ornaments. If started in moderate heat they will be in flower about this time. They should be removed to a house about 10° lower in temperature so soon as the bracts are formed in quantity and showing colour. For a few days give them comparatively little air and not too much water at the roots, or the flowers will probably fall. After a few days in the new quarters a little more air may be given. Keep them as near to the glass as possible, and do not shade, which is never required by these plants; the exposure to light and the lower temperature give colour to Bougainvillea glabra nearly equal to B. spectabilis, and the flowers will be good for four to six weeks. The plants will quickly grow and flower again if returned to heat after flowering, and subjected to the same cooling treatment before removal to the conservatory. Stove plants intended for a similar purpose or for exhibition should be gradually subjected to a lower temperature and plenty of light, to prevent their suffering from the exposure. Those plunged in fermenting material should be removed from it several days before they are taken from the stove. Dracaenas grown for room or conservatory decoration should be gradually submitted to a lower temperature, and have plenty of light; if not inured in this way the plants will become disfigured and useless when placed in rooms. Similar remarks apply to other stove plants employed for a like purpose, most of which will bear a brief sojourn in the conservatory provided they have been prepared for the purpose. Coleuses are useful summer decorative plants for cooler situations than stoves, they being prepared for such purpose by being gradually inured to a lower temperature. All

twining stove plants should be examined frequently to keep the young shoots from becoming entangled. If they become twisted together for any length of time they are not only difficult of liberation, but the young flowers showing are almost certain to be injured if not destroyed. *Tabernaemontanas* will be making free growth, and must have a liberal supply of water, but it must not be excessive, they being impatient of being too wet at the roots. When kept too hot they are liable to cast the buds, which may account for their being less grown than their merits deserve. *Vincas* intended for autumn flowering should not be allowed to flower now, but be stopped, which will cause them to push several shoots. Plants which are subject to red spider should be forcibly syringed on the under sides of the leaves as well as overhead in the afternoon of bright days. This and a moist atmosphere obtained by frequently damping available surfaces is the best preventive of this pest. Fumigate occasionally as a preventive of aphids and thrips.

Greenhouse.—*Lapageria rosea* and *L. alba* require abundant supplies of water during growth providing the drainage is ample and durable. *Acrophyllum venosum* and *Pimelea spectabilis* should receive a little shade in bright weather during the middle of the day, or the leaves will become browned and red spider will appear and rapidly increase apace. Similar remarks apply to *Chorozemas* and other hardwooded plants. Young *Pimeleas*, *Polygalas*, *Boronias*, *Aphelaxes*, *Croweas*, *Chorozemas*, *Eparicises*, *Eriostemons*, *Dracophyllums*, *Gompholobiums*, *Leschenaultias*, and *Tremandras* should be encouraged with slight syringings every afternoon in sunny weather, damping the material on which they stand every evening, closing the house early. *Hedaromas*, *Phenocomas*, and similar plants should not be syringed overhead, but the material on which they stand should be damped every afternoon and the outside of the pots, closing the house with sufficient sun heat to raise the temperature to 70° or 75°, and if the house be very light slight shade for three or four hours in the hottest part of the day will benefit the plants, but it must not be employed at any time but when the sun is very bright, or it will do harm by making the growth soft. *Cassia corymbosa* should be encouraged to make stout growth in a light position and then it flowers freely, but in shade it has not a chance. It must not be overpotted, and is impatient of excessive supplies of water. Being subject to red spider an application of some safe insecticide is to be preferred to frequent heavy syringings. *Hydrangeas* also require plenty of light, and the foliage must not suffer for want of moisture, the heads of bloom being increased in size by supplies of weak liquid manure to the roots. *Neriums* now that the flowers are pushing must have plenty of water, for if allowed to suffer they are liable to drop. The plants cannot have too light a situation, and if red spider appears forcible syringings will eject it. *Boronias*, *Eriostemons*, and *Chorozemas* are very effective for conservatory decoration, and allowed a light situation they will not suffer during the time of their flowering, removing them to their growing quarters as soon as the flowering is over. *Azaleas* as they go out of flower should be cleared of the seed pods. *Azaleas* placed in cool houses to retard the flowering should as they show colour be removed to a house where they can be kept a little warmer, syringing them overhead until the flowers are fully expanded. Show and fancy varieties of *Pelargoniums* should be assisted with liquid manure after the first flowers are set, which will increase the bloom and time of production. Zonal *Pelargoniums* intended to succeed the show varieties should be encouraged to make growth by potting if they require it, removing the flowers as they are formed, and supplying with liquid manure. If cuttings be inserted now in gentle heat and grown on through the summer they will make good plants for winter flowering.

TRADE CATALOGUES RECEIVED.

George Gummow, Loughborough Road, Brixton.—*Catalogue of Bedding Plants.*

Carter & Co., High Oldbarn, *Catalogue of New and Choice Plants.*
Samuel Yates, 16, Old Millgate, Manchester.—*Illustrated Catalogue of Hives and Bee Furniture.*

Ewing & Co., Eaton, Norwich.—*Catalogue of New Roses.*

TO CORRESPONDENTS.

BOOKS (C. B. W.).—We do not know of any work that you can obtain which will give you the information you require.

MUSHROOM (A. Sinclair).—It is *Agaricus campestris* var. *silvicola*, meaning an inhabitant of woods; it is edible, but not particularly good.

ASPARAGUS BEDS (J. A.).—You might with advantage remove a portion of the soil from the beds in the autumn before applying the winter dressing. In making new beds it will be better to obtain two-year-old plants for planting than to replant the old ones now in your possession.

PLANTS FOR ROCKWORK (J. S.).—If the rockery is shaded Ferns are appropriate; if in a sunny position alpine plants are suitable. If you will state the aspect and character of the rockery, and about the number of plants you require, we will endeavour to aid you in making a selection. Your other question shall have our attention.

CLEMATIS JACKMANII (An Old Subscriber).—You must not "pinch the

long shoots to make the plants grow bushy" unless you will be satisfied with bushes without flowers. The growths must all be retained, and in due time the plants will be covered with handsome flowers. These Clematis are suitable for covering walls, to which the shoots can be secured, pins, roots, and rustic work; or they may be grown in large beds and left to form a natural mass, when they often produce a gorgeous effect.

FANCY PANSIES (A. H.).—There are almost certain to be some "new" varieties amongst your plants that have been raised from seed, but it is extremely unlikely that they surpass the forms already in commerce. To can best ascertain what you require by submitting flowers to a good florist. Either Mr. Cannell of Swanley, or Mr. Laing of the Stanstead Park Nursery, Forest Hill, neither of whom is far from you, are quite competent to give you the information you covet.

DOUBLE PRIMROSES (J. H. Sussex).—Double forms of the wild Primrose are occasionally found in a wild state. The flowers sent are very good, and the variety is worthy of preservation. If grown in good soil and the plants divided by offsets as they are produced you will soon obtain a number of plants. All, or nearly all, will produce double flowers; but if the plants are left undisturbed for some years they occasionally revert to their ancestral form.

SEEDLING PRIMROSE (R. P. B.).—The variety sent is not new, neither is it common. It is worth preserving, if only for the purpose of seeing how it develops into a *Polyanthus*, as ours have done, when the plant attains mature strength. The fasciation of the Daisy is very marked. The Orchid has two labellums developed side by side. We cannot account for the freak of Nature that you have submitted. It is easy to say they are the result of "the season," but not by any means so easy to perceive how or in what manner the changes have been effected.

MUSCAT TROVERÉN GRAPE (P. W.).—This is no doubt the variety to which you refer. It is known also as *Troverén Frontignan*, under which name it is described as follows in Dr. Hogg's "Fruit Manual":—"Bunches large and well set, with very large round berries; skin greenish white at first, changing as it ripens to pale amber, and frequently with russet lines or specks; flesh pale and crackling, juicy, sweet, rich, and with a mild Frontignan flavour. This is a beautiful Grape, and appears to be an exaggerated form of White Frontignan. It requires a hot vineyard."

MILDEW ON ROSES (W. W. A.).—Your plants are unquestionably infested with mildew, which you may destroy by dusting the foliage with sulphur. The plants have probably received a check by the removal from the frame to the open garden. The cold and drying winds that have lately prevailed have injured many plants more hardy than your Roses. We do not recognise your Indian plant by the withered specimen before us, nor can we identify the *Salvia* without seeing its flowers.

PRESERVING THE COLOURS OF FLOWERS (L. C. L.).—It is by no means easy to preserve the colours of flowers in drying, particularly some delicate shades. After placing the specimens between sheets of blotting or the ordinary drying paper employed for botanical purposes, press firmly with a hot iron, which will fix the colours of some flowers, as quick drying is the principal object. Another system, which is often efficient if well performed, is the following: Secure the stems of the flowers to fine wire, and dip each separately in a thin clear solution of gum arabic, then suspend them and thoroughly dry, when they can be carefully pressed. The gum forms a slight glazing on the surface of the flowers that is hardly perceptible and yet sufficient to prevent the air affecting the colours.

DESTROYING THE CHERRY APHIS (M. W. W.).—This insect, *Aphis cerasi*, is one of the most difficult to destroy, especially when it is permitted to increase to a large extent and cover the trees thickly. The quassia solution to which you refer is made by boiling 4 ozs. of quassia chips for a quarter of an hour in a gallon of water, then adding 4 gallons of water before syringing the trees. If to this you add a solution of soft soap of the strength of 1 lb. to a gallon of water and a quart of tobacco liquor the application will be still more effective. Mr. Abbey found (see page 280) that from 3 to 4 ozs. of nicotine soap dissolved in a gallon of water destroyed the Peach, Cherry, and Plum aphids without injuring either the foliage or fruit of the trees.

ASPARAGUS FAILING (J. R.).—The beds appear to have been properly prepared. The plants were no doubt too old when they were planted; healthy two-year-old plants are better than those older, and they should be removed just as growth is commencing in the spring. We cannot account for the seedlings falling except on the assumption that the excessive rainfall of last summer contributed to the decay of a portion of the plants, the soil not having been sufficiently drained. The Zonal *Pelargonium* you name is often slightly suffused with pink when it first opens and then becomes white.

INSECTS (Sir S. D.).—The shoots of the *Picea Pinsapo* have been attacked by a beetle of the Scolytidae group, a species of *Hylurgus*. In similar instances some good has been done by throwing tobacco water from a hose over the terminal shoots, or a decoction of quassia made by boiling a few ounces of the chips in a gallon of water. The stem of the tree ought to be carefully examined, as a lodgment may be made there by some of the insects. (*S. C. Thirk.*)—The insects are the troublesome larvae of *Abraxas grossulariata*, frequent in spring in Gooseberry and Currant bushes.

BURNT EARTH AND RUBBISH (Dukes Bros.).—The chief chemical constituents obtained by burning the substances you mention would be carbon in the form of charcoal, potash, and phosphates, all of which are extremely beneficial to plant growth. There would also be other compounds formed in small proportions, but these could only be determined by analysis. The benefit the plants derive from the carbon is due to its combining with oxygen to form carbonic acid, in which form it is absorbed by the roots, and after being decomposed in the leaves, the oxygen being exhaled, the carbon is retained and assimilated to form the structure or woody portion of the plant. Potash enters largely into the composition of many plants and is essential to their health. The phosphoric acid in the phosphates combines with ammonia in the soil, thus forming a valuable manure which contributes nitrogen to the formation of the living or protoplasmic portions of the plants. You will find some valuable information upon this subject under the head of "Faring and Burning Land" in Nos. 980, 981, and 982 of the *Journal of Horticulture*.

INSECTS IN CUCUMBER BED (A Regular Subscriber).—There are no insects on the roots sent; you have probably killed them with paraffin, which we perceive you have been applying. You must not apply it stronger than we recommended; if "poured freely" on the soil it would certainly destroy the plants. Unless we have specimens of the insect in the living state we cannot

identify it or suggest "how it originates." We do not think the tan is the cause of the insect's appearing. We can only repeat that you should remove a portion of the surface soil from the bed containing the plants that are still healthy and add fresh soil from another source, and manure to induce surface roots. If you sprinkle a thin layer of soot on the bed before adding the fresh compost you will check the insects, if any, coming from below into the surface soil.

NAMES OF FRUITS (*Wm. Potten*).—We are not able to identify the Apple, which is probably one of the many local varieties found in various districts. (*R. G.*).—If the flowers are large the Peach is no doubt Early Beatrice, if they are small it is Early Louise. The latter is a larger and handsomer fruit than the former.

NAMES OF PLANTS (*J. Pope*).—1, *Carex sylvatica*; 2, *C. pendula*; 3, *Caltha palustris*; 4, *Allium ursinum*; 5, *Cardamine pratensis flore pleno*; 6, *Coronilla Emerus*; 7, Too withered to be identified. (*M. J. T.*).—The plant, we think, is *Lobelia Dortmanni*, which grows in similar situations to the *Eriocaulon*; the leaves differ considerably in the shape from *Eriocaulon*, and we think there is no doubt that the plant is a *Lobelia*. (*Thomas Jennings*).—As we did not receive your letter until four days after date, and as the flowers were not sent in a box with moist packing to keep them fresh, they arrived in such a crushed and withered state as to be quite unrecognisable. (*G. Haeussler*).—The small pale lilac flower is a double form of *Cardamine pratensis*; the other with the rough leaf *Lamium maculatum*. (*Z. F.*).—The Conifer is probably *Thuja plicata*, but no one could determine with accuracy from the small scrap sent. (*J. S. Aberdeenshire*).—The specimens were so much crushed as to be quite unrecognisable. They ought to have been sent in a small box, with their stems secured in damp moss. (*Inquirer*).—*Anchusa italica*. (*E. H. Harrison*).—*Pelargonium echinatum*. (*Irish Subscriber*).—Too withered for identification, as many plants are that are simply enclosed in letters and sent to us. The paper extracts the moisture from the flowers, and the post-office punches crush them to powder.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

THE CULTIVATION OF BUCKWHEAT.

BUCKWHEAT or brank is an annual fibrous-rooted plant with upright yet pliant and branching stems of a light green colour, somewhat tinged with red when approaching maturity. It grows from 2 feet to 3 feet in height, and in accordance with the vigour of the crop, caused by the condition and nature of the soil on which it is grown. The flowers grow somewhat in clusters, and are of a white colour tinged and shaded with red, and when the seed is sown in the proper season the plants are in full bloom during the month of July. The seed, which is of a dark brown colour and angular in form, is generally ripe about August or early part of September, although very shallow land will ripen the seed earlier, yet when the land is holding and well manured the ripening process will be delayed sometimes until the end of September. This plant may be grown upon any soil which is not too wet; if, therefore, the soil is in a healthy state it will usually produce a good crop without any manure being applied. This being what is termed a forage or green fodder crop, the seed is commonly sown in April or May, the latter month being best, because the young plants will be more likely to escape injury by frost. It may, however, be sown with advantage either for sheep folding and feeding on the land, or cut for soiling horses or cow cattle, as these animals are very fond of it, and thrive well when fed with it. For these purposes it may be sown with the surety of a valuable crop as late as midsummer, as in the warm weather it will vegetate immediately it is sown and quickly cover the ground, and if sown the last week in June as a second crop after trifolium, early vetches, rye, &c., it will give an abundant crop in September and until the night frosts commence. It may also be used as supplementary food for dairy cows when the grass in the park lands or pastures becomes short, for it will flush the milk of cows partially fed with it, and improve the flavour of the butter.

We must now call the attention of the home farmer to the method of cultivation. It is, like most other of the forage plants, best grown upon a clean fallow, and should be sown over the land broadcast by hand, for the angular shape of the seed will prevent its running freely if sown with Bennett's seed barrow. The seed required will be about 2 to 2½ bushels for sheep and cattle feeding, and is now worth about 4s. per bushel. The land may be left rather cloddy at the time of sowing if the surface is not too dry and hard, because when the seed is sown the land may be worked down fine immediately afterwards, and rolled with the ring roller. In this way we find the seed will be buried well and not too deep. Buckwheat may be sown in April and

May with the view of taking a crop of seed instead of Lent corn, and when sown with clover it is almost sure to plant well. It has been known where land has been what is termed clover-sick, or where the red clover has failed several times, that a good plant can be obtained when sown with buckwheat, for as a rule clover will grow much better with it than with wheat or barley. The buckwheat does not crowd the clover as wheat or barley is apt to do, but will only shelter it from the sun during the early summer season. We consider it a great advantage to have a growth of clover after the buckwheat is removed and harvested, for if not cut too low or near the ground the growth of clover will be very fine and sufficient for cutting up for cattle until the early frosts. We recollect that in five successive seasons we have been enabled to cut clover for horses and cattle during the latter part of September and through October into November until the first commences, nor does this injure the clover for the following year, as many farmers suppose who have not experienced it.

When the crop is cut for seed the stalks become rather hard, the woody fibre having been formed, and in case clover is growing amongst the crop it should be cut high, so as not to injure it. Leaving a portion of the ripened stalks behind is a matter of little consequence, unless a large quantity could be obtained and burned into ashes, for an analysis by "Vanquelin" gives the following results:—Carbonate of potash, 29.5; sulphate of potash, 8.8; carbonate of lime, 17.5; carbonate of magnesia, 18.5; silica, 16.2; alumina, 10.5; moisture, 9.0; total, 100. The results will vary with the soil without doubt on which the plant is grown, but still the carbonate of potash is so abundant that it has been suggested as a profitable transaction to burn the buckwheat straw for the sake of obtaining this useful salt. This, however, we must consider an error, for although the stalks are not sufficiently valuable as a food after the seed has been taken, yet there is no reason why it should not be employed as bedding or litter for cattle boxes, pig pens, &c. Afterwards it would come into use as dung, containing nearly all the value of the ashes, with an amount of ammonia added.

We have information relating to another species of buckwheat. It has yellow flowers, and is said to be superior to the ordinary sort, bears a smaller seed, and is hardy. It is said also that it will live through the winter and produce early spring food for cattle "Thayer," who is an authority in such matters, however, states that he has repeatedly tried the latter plant, and that its produce in the field is so insignificant that he cannot join in its praise. If however, what is said of it could be proved to be true, the home farmer must remember that we have various other plants for green fodder in the spring with which it could scarcely compete, such as rye, trifolium, and Italian rye grass. Some farmers advocate ploughing it down for manure in the same way as mustard is treated; if that is done it must be upon a very strong clay, or the stems would cause the land to be very hollow, for if ploughed under upon light soils it would be injurious. As the stalks contain two kinds of potash there is no doubt that upon strong soils the chemical action would be beneficial on the decay of the stems; but the mechanical action would be good also in our strongest soils by making them lighter and more easily worked. Mr. Arthur Young, our traditional agricultural authority, has observed that he found one bushel of buckwheat mixed with four bushels of bran would go farther than two bushels of oats, and has been found full food for a horse for a week. In any calculation the home farmer would make at the present time he must not be misled, but reckon the produce of buckwheat per acre and the price of bran before comparing with two bushels of oats for horse-feeding. In our own practice we have grown some very useful crops for sheep-feeding in the green state, as it may be fed with advantage by folding sheep upon at any stage of its growth, and we view it as useful to fill up a vacuum in the produce of certain fields as an intercrop between some others as green fodder. Buckwheat is also extremely well adapted for sowing with grass seeds for permanent pasture, as it prevents the weeds injuring the young grass plants, and also furnishes food for sheep. In either case we never think of allowing the sheep to eat the grass very bare, nor to run back upon the ground where they have been folded, they do not then hurt the young grass plants. By feeding off a gross and succulent crop like buckwheat they leave a great deal of manure behind and tread the land down firm, thus in both ways benefiting the future prospect of a good permanent pasture. We must in conclusion call attention to this crop if fed off without any other seeds being sown with it as a fallow crop and preparation for wheat, especially upon loamy soils; for it not only shades the land and leaves it mellow and kind, but the dressing left by sheep after eating off a full crop is of considerable value, especially to a stock flock; it should, however, be fed before the autumn rains commence.

WORK ON THE HOME FARM.

Horse Labour.—This will now consist of constant work on the fallows intended for roots, and it is very fortunate that the season has been exceedingly favourable for the clearing of land intended for root crops. But we wish to call the home farmer's attention to the growing of mangolds and carrots as a second crop after

rye and trifolium. We have had great success in past seasons by laying out manure from the cattle boxes and spreading and ploughing immediately. When the weather is very dry drill the mangold seed the same day; and although the land may be liberally manured, still we find it necessary to use in the drill 2 cwt. of bone superphosphate per acre with some ashes to give the young plants a good start, because this is required where the seeding is rather late. We must urge especial attention to the drilling on the same day as ploughing, because this is the safest way to insure a quick and regular vegetation of the seed. There is, however, another plan which we can advise the home farmer to adopt—that is, after the dung is laid out to rake it into every third furrow, and as fast as the land is ploughed to run the roller over, so that the women may follow and hand-dibble the seed on the furrow immediately over the dung, but the dibbling must not be delayed upon any account if wish to be certain of the seed vegetating. With regard to the drilling of carrots after a green fodder crop, we have had great success in obtaining heavy crops sown up to the 20th of May. For cattle we prefer the white Belgian, but for sale we prefer the Red Intermediate, as they grow short and clean and are more easily taken out of the ground. We prefer to lay out the manure and spread as for mangold, but the manure should be short and decomposed, in fact a near approach to mould, long dung from the yard or cattle boxes being apt to make the plants grow forked and fibrous. We drill our carrot seed in rows 20 inches apart and on the level, and previous to drilling the seed is hand-rubbed, which frees it from the burr or husk, in which state it runs as freely in the drill as turnip seed; but we also like to use superphosphate and ashes the same as for mangold, to give the young plants a good start at this late period of the year. Many farmers sow carrot seed in March, but we have always obtained the best crops after once ploughing, as the weeds do not injure the growth of the young carrot plants, nor are there so many weeds to contend with as when sown after a fallow, and by sowing in May instead of March we save the expense of at least one hoeing, say 7s. or 8s. per acre.

Hard Labour.—The feeding of stock will now make work for men—that is, the cutting of grass or green fodder of any kind both for horses and cattle. It is a common practice to make the teammen cut up the trifolium and clover, &c., for the horses; but we much prefer to put a man or men at this work without taking the teammen away perhaps from important field work, as we often require the horses to work beyond the usual hours in drilling. In case the carters are called upon to cut green fodder for the horses it is frequently the excuse made for reducing the time of working in the field. We therefore prefer to have all the green fodder required at the stables and cattle stalls cut by men appointed for the purpose, which fodder should be carted to the homestead by the odd horse or horses as the case may be. We may here observe that there is great advantage in cutting clover and all green fodder for the purpose of feeding under cover instead of turning the horses and cattle out to feed promiscuously, and we give it not only to horses but fatting cattle, and breeding sows, and store pigs of all ages. We have never had our cattle when feeding for the Christmas markets do better than when they get clover in the racks with a small quantity of mangold cut and mixed with cake and bean meal. If, however, we should be short of mangold we cut some of the clover mixed with sweet straw into chaff for the purpose of mixing with meal, as we find that meal when given with moist food to which it can adhere is always eaten with less waste than when used in any other way. We prefer also using as much clover as possible in the green state instead of making into hay and incurring the risk of injury by bad weather, besides which an acre of clover consumed in the green state will make double the quantity of beef as compared with the produce of an acre of clover made into hay, and quite double the quantity of manure in addition would be made from green fodder as compared with hay if ever so well saved and of the best quality. Shepherds and their assistants will now be engaged in washing the sheep in readiness for shearing. This is at all times a matter requiring care and attention in order that the animals may not be left in the water too long, but every animal should be taken in turn to be released from the water, otherwise they often suffer injury and sometimes die in consequence. Great care also is required when the sheep are dipped for the purpose of destroying ticks, &c., for we know a case which occurred lately where forty sheep died through inattention in dipping.

CAYUGA DUCKS.

We have before remarked that the races of useful Ducks are far less numerous than those of profitable poultry, though those of purely ornamental waterfowl are most numerous and diverse. It is now some years since a good deal was written and heard about the arrival on our shores of a new black breed from America—Cayugas. We were somewhat interested in looking out for them when they appeared here and there at our shows; but were not a little surprised to find them little other than our old friends of many names, popularly called Black East Indian. Black

Ducks are among the most lovely of poultry—that is, black Ducks of the race which might almost be called green, covered as they are with an indescribable green sheen of the greatest brilliance when seen in the sun. Such in former days went by various names—viz., Black East Indian, Buenos Ayres, and Labrador—sufficiently distant homes indeed! For many reasons we are disposed to think them natives of the western rather than of the eastern hemisphere. The oldest known strain is, we believe, that of Mr. Hayne of Fordington near Dorchester, who possessed it in great beauty and purity long before Ducks were exhibited, and who keeps it to the present day. From it we fancy most of the exhibition strains of Black East Indians (for so they will probably always be called) are descended. Like Bantams they have been bred for smallness of size, and the green sheen of their plumage being considered by fanciers their great points. Lovely as a tiny pair are when also good in colour, we have often regretted to see birds superb in the latter respect passed by for being somewhat oversize.

We feel persuaded that Cayugas have a common origin with the smaller black race, though they have not been bred for smallness. This is so much gain to those who wish to have a beautiful Duck of ample size for the table. The flesh of the smaller breed is excellent, but fitted rather to do duty for wild Ducks in a second course than to figure among green peas in early spring. Cayugas as shown are a square and massive Duck; we have seen some of immense size, though their plumage was dull compared with that of those of moderate size. We are well acquainted with one flock of the breed, in size between the huge exhibition Cayuga and the small East Indian, which is most hardy and beautiful, and certainly excellent for the table. So much harm has been done to the prolificacy of the larger breeds—Aylesburys and Rouens—by over-fatting to get them up to exhibition weight, that we think it very inadvisable to attempt to make Cayugas a breed of size. If that merely is desired there are other kinds which should have the preference; but when a Duck good all round—i.e., excellent both as layers and table birds, hardy and beautiful, is required, there is none which we can more highly recommend. We possess a drake, a present from the stock we have named which flourished and abounded in a Berkshire park, that is a perfectly lovely bird, and we believe would in the matter of colour compare well with the very best of black East Indians.

The fancier who is emulous of glory in the exhibition room can well bestow his time and pains in breeding the smallest of the small East Indians; at least, then may the larger Black variety be kept as a useful Duck, as it certainly is an ornamental one, and not bred up, or rather fatted up, to the ridiculous obesity of those larger breeds which for the most part have little chance in the show pen until they are both uncomfortable to look at and useless for breeding. The points of Cayugas, barring that of age, seem in no way to differ from the usual standard given for Black East Indians. The bills of the drakes, as with the latter variety, are wont to be somewhat lighter in colour than corresponds well with their dark plumage. We should prefer those with the darkest bills, and with plumage having green rather than purple gloss, and perfectly free from all tinge of rust. As, however, we have said, we should place vigour and prolificacy in such a breed before mere fancy beauties.—C.

VARIETIES.

PROLIFIC SHEEP.—We have to notice a singular and unusual circumstance connected with a breeding flock of ewes which has occurred at Marshal's Wick, St. Albans. The writer says, "We have a ewe here with a lamb about five weeks old, which has again brought forth two more lambs, all of which are doing well." He, however, does not inform us of the breed of the ewe, nor is it of any special importance other than that we must suppose it to be of the horned Dorset or Somerset breed, because having kept these sheep for half a century we have found them more prolific than any other. We often find them bringing two falls of lambs in the year, so that when the first lambs are being sold the ewes are found to be forward in lamb again. The above occurrence is very peculiar and must be considered quite an exceptional circumstance even amongst prolific sheep, such as the horned Dorsets or the Cotswolds, which latter will bring nearly as many twin lambs, although they will not produce two falls of lambs in a year like the horned ewes. We have never in our experience seen or known a case similar to the curious exception as stated above.

BATH AND WEST OF ENGLAND SOCIETY'S SHOW.—An alteration will this year be made in the days upon which the yard will be open to the public. Instead, as in previous years, of opening on Monday and closing on Friday, the forthcoming Show will open at Worcester on Wednesday the 2nd of June, and close on the evening of Monday the 7th of June, thus following the late example of the Royal Agricultural Society in making the two cheap days fall on Saturday and Monday, with a view to the convenience of the masses. The Exhibition itself will be such as to have been hardly surpassed by any of its magnificent predecessors. In the implement department there is a large increase over last year. The numbers in the live stock department are in the aggre-

gate not unlike those of the excellent Show of 1879, and all the principal breeders and exhibitors, whose animals are well known to the agricultural world, will be represented. The poultry Show will rival, if not exceed, that at Oxford in 1878, which was up to that time the largest ever held by the Society; and an appropriate speciality of the Exhibition will be an extensive and choice display of the artistic wares for which Worcester is famous. The horticultural department will, as usual, form an attractive feature of the Exhibition, and will consist of a number of rich specimens from the floral collections of gentlemen and nurserymen in Worcestershire and adjacent counties.

THE Committee of the British Bee-keepers' Association met on May 12th: present Mr. T. W. Cowan in the chair; Rev. G. Raynor, Messrs. Cheshire, Hooker, Hunter, Jackson, and Rev. H. R. Peel, Hon. Sec. It was arranged that Mr. Cheshire should represent the Association at the Royal Agricultural Society's Show at Carlisle in July next, Mr. J. Lee, jun., acting as expert. Mr. Cheshire presented to the Association a frame hive specially constructed for travelling to be used in explaining the management of moveable comb hives at manipulations in the Association's tents. It was stated that Mr. Carr had consented to lecture for the Association in Ireland, Mr. Abbott acting as manipulator. The Judges were selected for the coming Show at South Kensington, and arrangements were made for lecturing at the same time and place in the bee tent. A vote of thanks was passed to Messrs. Hunter and Cheshire for preparing a Cottagers' Manual for the Association. The diagrams were reported as progressing very satisfactorily, the first sheet being fully complete, and the second finished all but the lettering. Mr. Cheshire agreed to give a paper on "The Relations of the Honey Bee to Flowering Plants" at the next quarterly conversazione.

A CORRESPONDENT, "J. S.," asks, "What kinds of beet or mangold wurtzel are best to sow that will suit best for beer? In our district many people make beer in good part with beet. They cut up the roots and boil in a pot of water; then with this liquor is begun the making, and ginger, hops, &c., are added. The beet sweetens and colours the ale, it also helps to keep the barm for further use."

AN AGRICULTURAL PEST.—In consequence of the great prevalence this season of the *Tipula* grub, which is committing great ravages amongst wheat and other crops, the Royal Agricultural Society have considered it desirable to issue a description of the insect, drawn up by their consulting naturalist, Mr. Carruthers, F.R.S., together with his recommendations with a view to its destruction. The grub is earth-coloured, about three-quarters of an inch long, and fleshy, being a little thicker than a crow quill. It is destitute of feet. These grubs are very destructive both in the field and in the garden, consuming the roots of almost every green thing, beginning in the spring and continuing to eat during all the summer, until they change into the pupa state, from which they emerge in the autumn as daddy-longlegs. The eggs are deposited on the ground in autumn and remain exposed through the winter. The best destroyers of the grubs are the rooks, starlings, seagulls, lapwings, partridges, pheasants, and snipes. It is recommended that holes be dibbled over the land affected in order that the grubs may fall in, and as they have no legs they would be unable to get out again. The insertion of the dibble will kill all that may be in the holes. It is very important to destroy by burning all trimmings of hedges and ditches in the autumn, so as to prevent the preservation of the eggs through the winter.

SHEEP DISEASE.—A variety of questions respecting the liver fluke in sheep having been sent out to members of the Gloucestershire Chamber of Agriculture, twenty-four answers have been received. Thirteen members stated that they had had sheep rot on their farms, with 1558 sheep affected, of which about three hundred had died. Nine considered that wet low-lying land would produce such a condition as to favour the development of the disease, especially if clay or undrained land. The geology of a district appeared also to influence it, the disease being most prevalent on the lower lias and the new and old red sandstones, and comparatively rare on the oolite. In regard to food, the general opinion seemed to be that turnips are beneficial, and that in such seasons as the last two dry food should be used. The inquiries showed that sheep are more liable to the fluke when kept on lands where the lousewort (*Pedicularis sylvatica*) and the sedge called carnation grass grow, not because those plants produce the disease, but because they grow on marshy ground. Salt had been used with efficacy in several instances, and the use of lime water was recommended as helping to destroy the fluke when in its first stage in the stomach of the sheep.

BEE-KEEPING MADE EASY.—No. 5.

SUMMER TREATMENT.

THERE is a time for swarming and a time to prevent swarming. Seasons, districts, and pasturage have to be considered by bee-masters in determining the time to prevent swarming. In England, generally speaking, it should be prevented about the end of June,

while in Scotland, where bees are taken to the moors, it is often continued till the second week in July. The disadvantages of late swarming are numerous. The swarms may not have time or weather to fill their hives with combs, and hives partially filled with combs in autumn are almost always filled in spring with additions of drone comb. Another disadvantage of late swarming is the difficulty of having brood enough reared and hatched before the breeding season ends. This difficulty is most felt in the case of the mother hives and second swarms. As the old queens go with first swarms, three weeks at least pass before the young queens reared to succeed them become fruitful. In large apiaries there are always plenty of young queens coming to perfection in the swarming season, and experienced bee-masters make the most of them. The supernumerary queens of early swarms are cut out in their cells, are utilised by placing them in the hives of late swarms shortly after the first swarms have been taken from them, and these queens commence laying some fourteen days sooner than the queens that would be reared in the late swarms if no queens were introduced to them. Late first swarms, too, are sometimes assisted by given them (hiving them into) the hives and combs of early swarms. This needs explanation. We are accustomed to turn out all the bees of stock hives into empty hives on or about the twentieth day after first swarms were taken from them. Their young queens at that time have not commenced laying, and therefore the combs are empty of brood, and it may be, not well filled with honey. By placing a swarm with a pregnant queen in such hives the combs are filled at once with brood, and late swarms are thus made equal to those that are early. Meanwhile, the bees of early swarms are building combs in the empty hive into which they were cast for ten or twelve days before their queen begins laying. This practice should not be followed if the combs are old and black. Better let such combs go to the melting pot than be given to swarms. It is better to give swarms empty hives than place them amongst old combs.

Swarms on being hived should be fed if the weather at the time is unfavourable. Every bee in a natural swarm takes food enough to keep it alive three days; but it is well for swarms never to feel the pinch of poverty and want. If rainy or cold weather follow swarming we advise feeding. Money is never more profitably spent in an apiary than in helping swarms during inclement weather. A few pounds of syrup given to a swarm enables it to construct combs, and these are at once filled with brood. The amount of work done by bees that receive no check is astonishing. A swarm has been known to fill a hive with combs and store up 80 lbs. of honey in fourteen days. How much honey is consumed in manufacturing a pound of wax is a question not yet settled, but it is certain that combs or wax secreted from syrup cost less than those secreted from honey, and the administration of a few pounds of syrup to a young swarm in unfavourable weather encourages it much. It should be known by all bee-keepers that while first swarms are the outcome of hives overcrowded, second and third swarms often issue from hives not crowded, and therefore enlargement of hives do not prevent swarming a second and third time. If first swarms are not obtained there can be no second, and swarming may in most instances be prevented by timely enlargement of hives; and this brings us to notice the practice of supering.

About three weeks before hives are ready to swarm all their combs are covered thinly with bees, and if weather be favourable eggs are set in all the combs. At this season bees are bent on multiplying their numbers, and brood is reared to the utmost of their powers to cover it. The bees as well as the queens are engaged in the work of distributing the eggs in empty cells all over their hives. Three days ago a gentleman in Sale asked me to look into his hive to ascertain how far it was from the swarming point. It is a large hive, and we showed him sealed brood in the outside combs, and told him his bees would swarm or be ready for swarming in three weeks. We do not think Mr. Raitt's idea or practice of shifting combs from centre to outside, and *vice versa*, a good one. He did well to advise bee-keepers to be cautious and careful in this work. In this matter it will be found that Nature unassisted is assisted the most. With food enough to feed brood, and warmth enough to hatch it, bees are not slack to spread brood from top to bottom and from side to side of their hives. Well, then, shortly after the combs of hives are covered with bees supering begins.—A. PERRIGREW.

WIRED FOUNDATION SUPERSEDED—NEW METHODS OF PREVENTING SAGGING.

IN my last communication on wired foundation I pointed out that the grubs were killed by contact with the metal threads, and further observation has shown me that the loss to the bees, if the former are not removed, is far in excess of what I had at first supposed, since eggs are almost certain to be laid pretty quickly after the clearing-out of the dead remains, the grubs hatching therefrom dying generally after being fed up to half size or little more. Those who know how greatly profitableness is interfered with by

an undue number of drones will perceive the gravity of the evil in this leak of life labour and energy. To get rid of the wires is imperative, and my first efforts took the form of endeavouring to remove from below by pincers; but I was met by two difficulties—one the loss of form to the comb, the other breaking of the wire. Of these I found it impossible to remove more than one in three, and since I believe there is but one kind of wired foundation in existence in England none here are likely to be much more successful in this particular than myself. I had not up to this point placed my foundation in the frames as transatlantic authorities recommend, because I felt if this were indeed the only plan the utility of wired foundation was disproved *en avance*. In short, to give an idea of the involved trouble let me say that boring holes in the top bar opposite to the wires, clearing away the wax to expose about an inch of these, and then drawing them through and getting ready for insertion in the hive, occupied me twenty-one minutes, a period which practice would not very greatly reduce, as the thin wires are broken by any rough usage in a moment. After all this labour, waiting until the comb was nicely formed, I met the most complete failure, for all the wires but four broke in my attempt to draw them out, and the four which I removed literally crumpled up the comb as you would crumple up a letter for the waste-paper basket. With further trials I met the same results. No wonder Mr. Betsinger at the north-eastern convention of bee-keepers, held last February, said, "A year ago at the national convention at New York I offered \$50 to any who would present me with a square foot of foundation on wire that was perfect, but no one has done it."

Without at present making more than a passing reference to the unnaturalness and waste involved in the flat-bottomed cell, a matter which I wish to look at from its mathematical side another time, I am pleased to be able to say that I have already had successes in some experiments I have been trying, which must deliver us, if nothing more, from any necessity for wires or flat midribs.

Glue, as most of us know, can be used successfully in fastening combs. Taking my cue from this, I at first tried some ordinary fine sewing cotton, dipped it in thin glue, placed it on the face of the foundation in perpendicular lines about $1\frac{1}{2}$ inch apart, and gently passed the finger along it to bring it into contact with the edges of the incipient cell walls, and when dry placed it in the centre of one of my strongest stocks, a position which would certainly have caused half an inch elongation in the sheet if unassisted. The bees worked it beautifully, no sagging occurred, but, contrary to my expectation, the bees were unable to attack the glued cotton. They built it into the fronts of the cells near to the base of course. As the comb was half built pulling out the cottons tore away little of the walls of those cells through which they passed, which the bees in an hour or two repaired perfectly, and we were already altogether ahead of wired foundations, the labour not being one tithe of that involved in drawing out, or rather trying to draw out, the wires, leaving the troublesome fixing into the frame out of view. The cell bases in properly formed foundations are never perpendicular, but the weight of bees and wax is always tending to bring them to this position, hence the sagging; but the cottons acted as a bow string upon the bow, and prevented the points of attachment from receding from each other. The *beau idéal*, it appeared to me, would be reached could we find something which the bees would remove as the comb progressed. To this end I have been and am still experimenting with hair, ravelling, cotton, silk, and thread, fixed by gum, glue, wax, shoemakers' wax, and varnish, and have so far succeeded that it is only now necessary to determine which fibre and fixing are uniformly most desirable. Any of these, it seems to me, pressed into the comb during its manufacture must fail without flat bottoms are used, because as the fibre runs to the right and left of the perpendicular in every cell diameter it simply without stretching assumes a straight line as the comb drops without in any way sustaining it. I will report further in the future of my experiments; but another plan has given me perfect results, and this is, I believe, likely to be very largely adopted. I soldered five pins by their heads to a piece of fine brass wire at intervals of about 1 inch or a little more, and then turned the wire at the end to a right angle, so that the arrangement looked not unlike a tiny rake head with six teeth. Half a dozen of these were prepared, and when the foundation (I use that Mr. Raft supplies—I mention this as it is best known amongst us) had been waxed in the frame and the pins all cut down to about half an inch in length, the turned ends of the wire went over the top bar at regular intervals, and the cut pins were pressed through the foundation, as it stood on the board used in waxing. The whole was lifted, and so firm was it that while the frame was held horizontally the foundation kept its position. It was given as before to a strong stock. When half worked the little rakes were removed, and the five holes each left were invisible in an examination made half an hour afterwards. The comb is most perfect, no disposition to turn at the corners—the one fault of all foundation I have ever

seen, the rakes preventing any movement. I can only now add I shall name these wire arrangements "foundation rakes."—FRANK R. CHESHIRE, *Avenue House, Acton, W.*

DOES "B. & W." in the article on "Cottage Bee-keeping" in the number for the 18th inst., mean that the hive to be inverted beneath the floorboard of a hive to give room is to be turned upside down? I would have been sure that was meant, but that further on it is said that the floorboard of the hive—not its head—is to rest in the sealale pot.—BEGGELY.

OUR LETTER BOX.

FOOD FOR YOUNG GUINEA CHICKS (*Mis C. W.*).—Chicks of the Guinea Fowl are so strong that they require food soon after they are hatched, and should have a constant supply by them until they are allowed to be at liberty. Their troughs should be constantly supplied, for they die if they are kept without food for three or four hours. Have the mother under a coop in a warm corner of the garden, and facing the south. Egg boiled hard, chopped very fine, and mixed with oatmeal is their best food.

EGGS SOFT-SHELLED (*A. B. P.*).—The hens' egg-organs are over-excited. Give her more green vegetable food and no corn till the defect is removed. We once knew a yard of Dorkings having an extensive grass run. They all laid shell-less eggs, and the pullets evidently had over-excited egg-organs, the eggs were distorted, and added eggs, almost without exception, characterised every sitting.

BEE VEIL (*R. Edmunds*).—You can obtain what you require from Messrs. G. Neighbour & Sons, 137, High Holborn, London, who will send you a price list of apianian appliances on your making application for the same.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. $51^{\circ}33'40''$ N.; Long. $0^{\circ}8'0''$ W.; Altitude, 111 feet.

DATE.		9 A.M.					IN THE DAY.						Rain.
1890.	Baromet. at top and Sea level.	Hygrome- ter.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature.		In- sun.	On grass.		
		Dry.	Wet.			Max.	Min.	deg. sun.	deg. grass.				
May.													
Sun. 9	Inches.	deg.	deg.		deg.	deg.		deg.	deg.	In-			
Mo. 10	30.308	49.3	43.5	N.E.	49.5	54.3	38.5	90.4	31.7				
Tu. 11	30.133	47.8	42.6	N.N.E.	49.1	53.3	37.1	79.5	30.0			0.09	
We. 12	30.355	50.5	44.4	N.E.	49.3	50.0	42.7	120.1	41.5				
Th. 13	30.015	55.4	48.7	N.E.	49.3	54.3	41.6	122.6	34.3				
Th. 13	30.146	56.5	51.0	N.E.	50.3	70.6	40.4	123.5	37.3				
Fri. 14	30.181	59.1	54.1	N.N.E.	52.3	77.6	44.3	126.3	49.3				
Sat. 15	30.099	57.3	54.3	N.N.E.	54.3	77.8	48.3	130.6	47.1				
Means.	30.108	53.6	48.6		50.5	65.7	41.6	114.5	37.5			0.09	

REMARKS.

9th.—Slight grass frost early; cold dry wind throughout the day with sunshine occasionally, especially after noon.

10th.—Slight shower in forenoon, cold and dull, with absence of sunshine.

11th.—Fair and warmer; sunshine, but good deal of cloud.

12th.—Very fine bright day throughout, good deal of wind. Clear star-light evening.

13th.—Beautifully fine; warmer day.

14th.—Fine hot day; cloudless evening.

15th.—More wind, but very fine hot day.

A very fine week with only one shower, two hot days and much sun, but cold winds.—G. J. SYMONS.

COVENT GARDEN MARKET.—MAY 19.

THE cold and dry weather that has lately prevailed has affected the supplies of vegetables, and business, though improved, is not by any means brisk.

FRUIT.

	s.	d.	s.	d.		s.	d.	s.	d.
Apples.....	½ sieve	3	6 to 4	0	Nectarines	dozen	0	0 to 1	3
Apricots.....	dozen	0	6	0	Oranges	dozen	10	4	0 to 12
Cherries.....	box	1	6	3	Peaches	dozen	13	0	18
Chestnuts.....	bushel	12	0	16	Pears, kitchen..	dozen	0	0	0
Figs.....	dozen	10	0	12	dessert.....	dozen	0	0	0
Filberts.....	½ lb.	0	0	1	Fine Apples....	½ lb.	1	0	3
Gobs.....	½ lb.	0	0	0	Plums.....	½ sieve	0	0	0
Gooseberries..	½ sieve	0	0	0	Raspberries....	½ lb.	0	0	0
Grapes, hothouse	½ lb.	5	0	8	Strawberries...	½ oz.	4	0	0
Lemons.....	½ 100	6	0	10	Walnuts.....	bushel	0	0	0
Melons.....	each	10	0	12	ditto.....	½ 100	0	0	0

VEGETABLES.

	s.	d.	s.	d.		s.	d.	s.	d.
Artichokes.....	dozen	2	0 to 4	0	Mushrooms	pottle	1	0 to 1	3
Asparagus.....	bundle	1	6	5	Mustard & Cress	punnet	0	2	0
Beans, Kidney..	½ 100	1	0	0	Onions.....	bushel	3	6	5
Beet, Red.....	dozen	1	0	3	pickling	quart	0	0	0
Broccoli.....	bundle	0	9	1	Parsley..... doz.	bunches	6	0	0
Brussels Sprouts	½ sieve	0	0	0	Parsnips.....	dozen	1	0	2
Cabbages.....	dozen	1	6	2	Peas.....	quart	0	0	0
Carrots.....	bunch	4	0	6	Potatoes.....	bushel	3	6	0
Capicums.....	½ 100	1	6	3	Kidney.....	bushel	4	0	0
Cauliflowers...	dozen	0	0	3	Radishes..... doz.	bunches	1	6	2
Celery.....	bundle	1	6	2	Rhubarb.....	bundle	0	4	0
Coleworts, doz.	bunches	3	0	4	Salsify.....	bundle	1	0	0
Cucumbers.....	each	0	4	0	Scorzoneria....	bundle	1	6	0
Endive.....	dozen	1	0	2	Seakale.....	basket	3	0	0
Fennel.....	bunch	0	8	0	Shallots.....	½ lb.	0	0	0
Garlic.....	½ lb.	0	6	0	Spinach.....	bushel	3	0	0
Herbs.....	bunch	0	2	0	Turnips.....	bunch	0	4	0
Leeks.....	bunch	0	3	0	Vegetable Marrows	each	0	0	0

* In America some put foundation on the wire after the latter has been stretched in the frame; the two are then pressed together. This form may admit of extraction of wires with greater ease.

WEEKLY CALENDAR.

Day of Month	Day of Week	MAY 27—JUNE 2, 1880.	Average Temperature near London.			Sun Rises.	Sun Sets.	Moon Rises.	Moon Sets.	Moon's Age.	Clock after Sun.	Day of Year.
			Day.	Night.	Mean.							
27	TR	Royal Society at 8.30 P.M.	66.3	44.9	55.6	3 54	7 59	11 20	7 1	18	3 3	148
28	F	Quakett Club at 8 P.M.	67.5	44.6	56.3	3 53	8 1	11 46	8 36	19	2 55	149
29	S	Horticultural Show at the Crystal Palace.	67.5	43.9	55.6	3 52	8 2	morn.	9 49	20	2 46	150
30	SUN	1st SUNDAY AFTER TRINITY.	68.0	44.8	56.4	3 52	8 3	0 7	11 7	(	2 39	151
31	M		70.5	45.0	57.6	3 51	8 4	0 25	0.33	23	2 31	152
1	TU		68.2	45.9	57.1	3 50	8 5	0 41	1 36	23	2 22	153
2	W	Bath and West of England Show (Worcester).	69.7	45.3	57.5	3 49	8 6	0 57	2 47	24	2 13	154

From observations taken near London during forty-three years, the average day temperature of the week is 68.5°; and its night temperature 49.1°.

VEGETABLES AT THE EXPERIMENTAL GARDEN.



AMONGST a great number of vegetables, principally of new or recent introduction, tried last season at the Experimental Garden at Girtford, there were few only which could, in what Mr. Fish has aptly termed the most eccentric of all eccentric seasons, be satisfactorily formed; but the varieties described and approved below stand out conspicuously.

Several others augur well for the future, and after a further test this year I hope to be able to report on them. The year 1879, however, with all its disadvantages will not have passed without its lessons and leaving us some small amount of counteracting benefits, for the experience gained and losses sustained by horticulturists and agriculturists after such cruel and crucial adversity will inevitably result in greater caution being observed as to the crops and varieties to be grown for the future. The losses of last year may therefore be averaged over a cycle of seasons.

Potatoes.—Perhaps one of the most striking advantages gained has been with regard to the Potato, as it has been clearly ascertained that there is at least one variety which may be safely grown as practically disease-proof, the testimony in its favour being pretty nearly universal. I allude to Scotch Champion, which here did not belie itself, but proved the only one reliable and sound in tuber, although in the early stage the haulm was partially blackened by the disease. The stem, however, of the true variety contains a more than ordinary amount of woody fibre, which doubtless causes obstruction to the descent of the spores. Amongst the other varieties grown Magnum Bonum, although coming second in order of merit as a disease-resister, does not appear to be reliable; for in addition to the few tubers which showed the disease when lifted, many others continued to go during the winter although frequently looked over, and at planting time the stock left became lessened quite one-third. I observed no diseased tubers, however, amongst the Champions under similar circumstances. The worst of all grown here was Grampian, one of the varieties recommended by the Committee of the International Potato Society to be grown on light land, but here it was given strong stiff soil; but as not a tithe of the produce was saved it is probable that caution will be desirable in adopting it extensively.

Maize.—Another decided test has been obtained in the case of Maize, of which several of the early and other varieties, including Quarantain and Messrs. Suttons' New White Pyrenean, were sown in the open on the 9th of May last, on a piece of strong cold land, the White Pyrenean being, as I have since proved, the only one which ripened, the seed produced from last year's cobs having vegetated well.

Kidney Beans.—The season also was a severe test for Haricot Beans, for out of upwards of fifty varieties grown many never fruited at all, others not only fruited but ripened their seeds well. Amongst the latter were the dwarf early varieties Rachael and Minier's Early, both re-

commended by the Royal Horticultural Society, also Daniell's First Early (much like the last), Sutton's Ducrot, also a distinct and hardy variety but having a curved pod. The earliest of all was Williams' Early Favourite, and for private gardens it is an acquisition, but, possessing the disadvantage of a striped pod, is rendered ineligible for market purposes. Amongst Butter Beans, Flageolet Dwarf Butter from Messrs. E. G. Henderson and Messrs. Vilmorin gave a profusion of very fine, long, bright golden yellow pods of excellent flavour and remarkably tender; the other Butter Beans barely fruited at all. M. Lebonf's new green-seeded Haricot fruited well and partially ripened its seed, and therefore in an ordinary season will doubtless prove an acquisition. The new Russian White Giant Runner from Messrs. Haage & Schmidt produced continuously very large broad pods, and appeared quite as fertile as the Scarlet Runner. Another runner called Speckled Beauty, and which seems to be a variety of the York and Lancaster, was earlier than all the others. A variety also of the same type with purple pods was distinct and early.

Broad Beans.—Amongst Windsor and Longpod Beans, Megatherium from California, and Aqua Dulce from Messrs. Henderson and Messrs. Vilmorin, were both very fine, the former exceeding everything of the kind I have seen, many of the pods being 14 inches long.

Peas.—From nearly one hundred named varieties of Peas (not of my own introduction, of which I may speak hereafter), Messrs. Carter's Telephone proved undoubtedly the most distinct, as it is a very fine-podded tall Pea of excellent quality. It does credit to Mr. Culverwell the raiser, and its adoption by me for brood stock is, perhaps the best testimony I can furnish in its behalf. R. Gilbert appears to be a good 3-feet tall variety, coming in before Omega.

Lettuces.—The best Lettuces were Messrs. Vilmorin's Laitue Rouge d'Hiver for winter. Of this (a Cabbage variety), I have at the present time very fine well-hearted specimens which have stood through the past trying winter entirely in the open, unprotected and practically unattended. Messrs. Barr & Sngden's Neapolitan Cabbage and Covent Garden White Cos are the best summer Lettuces.

Broccolis.—Amongst Broccoli Gilbert's Champion withstood bravely the winter of 1879-80. Of this variety and Suttons' Dwarf I saved without protection or laying-in about half the crop, and in a locality where the common Laurel is killed to the ground.—T. LAXTON, Bedford.

FREE FERNS, GUM TREES, AND CLUB PALMS IN THE OPEN AIR IN THE SOUTH-WEST OF SCOTLAND.

The time was when it was thought that trees would scarcely live in Scotland, and that skill in gardening was required to cultivate a Cabbage! I propose in a few paragraphs to show that there are spots in Scotland enjoying a climate as genial as any in the south of Britain.

Gum Trees.—On this the thirteenth day of May I visited the little garden attached to Cromla House at Corrie, on the east side of the Island of Arran on the Clyde, led to do so by having received a letter from Sir Ferdinand Von Mueller, F.R.S., &c., the distinguished Australian naturalist, asking

me to let him know by its scientific name a Gum Tree growing in this garden. The seed from which it was raised was produced by me eight years ago from Covent Garden, and was labelled *Eucalyptus pendula*. It has the perfume of the Blue Gum, is much more hardy, and also much more beautiful. So excitable is it, that when I visited the place on the 1st of March I found it already, owing to the mild weather, having its branchlets tipped with new growths of 1½ inch in length, and of a fine reddish-purple hue. At the beginning of April it had made no further progress. To-day the fresh growths were from 2 to 6 inches in length. I enclose a specimen. A Blue Gum (*E. globulus*) was to-day only beginning to make fresh growths, and many of the shoots of last year had been destroyed by the frosts of winter.

Ferns.—*Dicksonia antarctica* has grown here for the last thirteen years, and has never lost a single frond by frost. *Dicksonia squarrosa* has been planted for two years, and already one of the fronds of this year has attained its full length. Of the smaller Ferns, such as *Todea superba*, *T. hymenophylloides*, *Asplenium lucidum*, *A. falcatum*, *A. coriaceum*, are all in good order. *Todea superba* lost its fronds in winter, and fresh ones are only appearing. *Todea hymenophylloides* remained green and fresh all the winter.

Club Palms.—*Cordylina australis*, *C. indivisa*, and *C. Veitchii* are uninjured. I might mention other plants, but those named are sufficient proof of a mild climate, none of the plants named having received any protection, except the smaller Ferns, which were protected by a circle of Spruce twigs. Last winter was the most severe for many years. At Kilmarnock it fell on the grass to 5° Fahr.—DAVID LANDSBOROUGH, *Kilmarnock*.

NOTES ON DAPHNES.

No plants appear to be so much neglected in private establishments as the Daphnes. Their flowers, although insignificant, are deliciously fragrant and much admired by lovers of sweet-scented flowers, and the adaptability of the plants to flower during winter and spring should alone commend them to the notice of gardeners and amateurs. Many people purchase healthy young plants that appear annually prepared for the market with a number of buds or flowers upon them, and resolve to succeed in their cultivation, yet they fail. I have been frequently astonished at the miserable examples too often seen. The Daphne is difficult to manage, and will not flourish under many systems of cultivation; and if neglected they soon show signs of disease in their foliage, much of which falls, the bare stems only having perhaps two or three small leaves on the end of each shoot. When seen as I have described the Daphne can by careful cultivation be brought again into a flourishing condition—that is, if extreme measures have not been adopted to kill all their roots as well as cause the foliage to drop. I doubt not that many have given up the cultivation of these plants in despair through one or two of these failures. This should not be. Failures are sure to occur in gardening and cause disappointment; nevertheless, they are good if only they cause us to consider upon what basis we had founded our operations that did not lead to the success we hoped for.

Daphne indica rubra is nearly hardy, and no doubt would stand outside in the southern parts of the country, in sheltered nooks. It is, however, its culture in pots that we have now to consider. Our inexperience of the hardness of the Daphne in the first place doubtless led to failure. Many of us might learn from the small gardens and the amateur's greenhouse many things worth noting. It was in a small greenhouse I first discovered the cause of failure in Daphne growing. The Daphne will not continue long in good health if nursed-up in houses the whole year and subject to great extremes in temperature. Dry heat in winter for the purpose of excluding frost from the plant is a great mistake, and does more harm than good. When subject to greenhouse treatment all the year the plants do not enjoy that period of rest so essential to their well-being, nor is the wood sufficiently ripened. In giving advice to beginners I would say, If the plants are procured in the spring place them on moist ashes in a cold frame. The plants should have abundance of air when the weather is at all favourable. As the days lengthen and the sun has more power the lights can be taken off during the day, closing the frame in the afternoon with a little sun heat, and syringing at the same time—that is, from the present time onward. Under this treatment the plants soon start into growth, and the points of the shoots should be pinched out after a few inches of wood has been made if good bushy plants

are required, each shoot will then produce three or four. The plants should be kept in a rather close temperature for a few days until signs of growth are perceptible, when free ventilation will be needed. If bloom is not wanted the shoots must be stopped twice or more according to the growth; but when bloom is required they must not be stopped more than once, and that early, or the growth will not be sufficiently ripened to produce flowers. As the season advances and growth extends ventilate the frame freely night and day until the lights can be taken off entirely, or the plants placed outside the frame or partially plunged, which prevents them from drying so quickly at the roots. I prefer keeping them in a frame in this locality, so that the lights can be employed to protect the plants from heavy rain. The Daphne dislikes being excessively wet at the roots, and is most impatient of drought. Therefore it is necessary at all times to apply water with great care.

In potting, good drainage should be given to prevent the soil becoming sour. The compost I have found most suitable is a rich fibry loam and plenty of coarse sand well mixed. If a better place can be selected for the plants during winter than the cold frame in which they have been growing frost will not injure them. Our plants were kept during the past severe winter in a cold frame; the soil in the pots was frozen hard and the foliage covered with ice, yet there have been no injurious results. Previously I had wintered the plants in a greenhouse, where a temperature of 40° to 45° was maintained; they remained there until this time of the year, and did not thrive until the cool system was adopted. The Daphne can be brought into flower by a little additional heat, but as soon as flowering is over the plants should be hardened and placed again in cold quarters.

Daphne Mezereum will come into flower early in spring. Though deciduous it is a lovely plant in pots for conservatory decoration. Peach houses when first started are good places in which to bring forward this Daphne. It will not open its flowers in strong heat. It requires careful lifting when it is to be placed in pots and subject to forcing.—WM. BARDNEIL.

ROSES, PEACHES, AND NECTARINES.

ROSES.—I am well off in this matter; but I fear, from what I hear, Roses generally are in a sad state. I have lost scarcely any, but I am sure many trees that will not die have been stricken. I am at present free from aphids, bud worm, and mildew. The winds here, N.E., are so cold and cutting that things cannot grow. We have had a fine six-hours thunder rain which has greatly helped us. The earth being now well dried, rain with sunshine will be very beneficial.

PEACHES AND NECTARINES.—These under glass are a great success, out of doors they are a sad failure. From 120 Peach and Nectarine trees I do not expect to gather two dozen fruits. The trees, purposely kept small, are very healthy and free from blister. In a word they are beautifully foliaged. I think I have one of the finest collections in England as an amateur. I still stick by some of the old sorts, such as Early York, Royal George, Violette Hâtive, Noblesse, Bellegarde, and Barrington. To these add Early Louise, Early Alfred, Early Ascot, and Dr. Hogg. *Nectarines*.—Elruge, Downton, Violette Hâtive, Pitmaston Orange, Rivers' Orange, and Rivers' Pine Apple. The above are the cream. My great card is Royal George, but it is given to mildew under glass.—W. F. RADCLIFFE, *Dorset*.

BEDDING-OUT.

MANY gardeners in warm localities have already commenced filling their beds for the summer. Unless, however, more favourable weather ensues, the beginning of June will be quite early enough to put out the majority of the plants, including Pelargoniums, as during the prevalence of bright dry weather, accompanied with cold winds, and perhaps frosty nights, they will make no progress, and had far better remain in their present quarters. Those who from various causes have to commence in dry weather will do well to water the beds overnight, and to plant as much as possible in drills, or else to form a basin with the soil round each plant. They can thus be easily and thoroughly watered till established, after which the soil can be levelled with a rake, enclosing moisture at the time. The balls at planting time should on no account be dry. Amateurs frequently do not plant deep enough, and others again have the soil in their beds much too high. A flat bed raised slightly above the surrounding level can be most effectively planted without entailing frequent drenchings of water.

plant firmly, and a trifle below the surface. Leggy plants, unless wanted for back lines, should be planted in a sloping direction, as they can then be readily pegged down, which operation will cause them to form fresh growth down the stems.

It is difficult to lay down any general rules as to the arrangement of plants, so much depending on the stock at hand. Massing of one or more varieties, with an edging, is perhaps the most showy, but in a small garden a general mixture will give much pleasure, and will besides suit, in many instances, this season's stock of plants. Care must be taken to arrange the plants according to their heights, and afterwards to regulate them by pinching back where required. A bed of mixed Verbenas, if the soil is good and plenty of moisture given at the roots, are very attractive till destroyed by frost. Among these a few plants of either *Abutilon Thompsonii*, *Veronica Andersonii* variegata, or variegated Maize, may be planted with advantage. *Verbena venosa* is less susceptible of injury from drought, and is very effective planted in mixture with silver or golden foliage plants, including the three last mentioned. The double *Petunias* succeed well during a dry season, but the single mixed varieties are the most showy and long-enduring. They grow and flower freely in a poor soil, and may be edged with dwarf yellow *Nasturtiums* of the Tom Thumb section, or failing this *Pyrethrum Golden Feather*. A few plants of the *Paris Daisy* (*Chrysanthemum frutescens*) interspersed with the *Petunias* has a very good effect. To make the most of a few choice variegated *Pelargoniums*, whether gold or silver, plant widely, and among them dot strong-growing blue *Lobelias*, seedlings answering well for this work. The new semi-double *Pelargoniums* of the Wonderful type are excellent bedders, and the older and more vigorous double varieties will also succeed admirably if planted in rather poor soil and a hot position.

Those purchasing bedding plants should not omit the following *Pelargoniums*:—*Vesuvius*, scarlet; *Lady Constance*, Grosvenor, an older but very brilliant scarlet; *Lucius*, cerise; *Master Christine*, pink; *Amaranth*, deep pink; *Madame Vaucher*, white; *Crystal Palace Gem*, golden foliage; *Flower of Spring*, silver variegated; *Mrs. Pollock* or *Lady Cullum*, golden tricolor; *Beauty of Calderdale* and *Perilla*, bronze zonal. Black *Douglas* and *Earl Roselyn* are very superior to the two latter, but are more expensive, and the same remarks apply to *White Vesuvius* and *Salmon Vesuvius*. Of *Verbenas* *Purple King*; *Lord Raglan*, scarlet; *Snowflake*, white; and *Crimson King* are useful old varieties. Good bedding *Violas* are *Tory*, blue; *Blue Perfection* and *Lutea grandiflora*, yellow. The *Heliotrope* *Miss Nightingale* is a very fine blue, excellent for bedding-out or pots; and the same remarks apply to double *Petunia* *King of the Crimsons*. *Lobelia pumila magnifica* L. Brighton, L. Emperor William, all blue, are alike excellent; and the best blue *Ageratum* is *Lady Jane*. Good shrubby *Calceolarias* are *Golden Gem*, *Gaines' Yellow*, and *Sparkler*, crimson and yellow. The rich blue of *Salvia patens* tells well in the back lines, so also do the dwarf bedding *Dahlias*, notably *Crimson Gem*, *Fireball*, scarlet; *White Bedder*, and *Pluton*, yellow. *Tropeolum* *Ball of Fire*, T. *Vesuvius*, T. *Triomphe de Gand* are most brilliantly flowering plants for covering pillars, porticos, and similar purposes.—W. JEGULDEN.

VEGETATION IN INVERNESS-SHIRE.

I AM in despair about *Roses*. The green fly appears to be more than usually abundant this year. They attack the *Roses* outdoors against the wall just as badly as those within the glass houses. The stalks and leaves are thickly covered with them, and they are most difficult to get rid of. We must attribute this, I suppose, to the sudden changes of temperature we have been having all March and April, but our prospects in other respects are hopeful. Small fruits—such as *Gooseberries*, *Currants*, and *Raspberries*—are equally as good and fair as crops as last year, and are well forward; wall fruit not so promising, but *Cherries* show a good bloom. *Peas* and *Potatoes* are fully three weeks earlier than last year, and the same may almost be said of other kinds of vegetables. There has been a great drought, and rain is much required. Last night we had a seasonable shower, but not nearly enough. The common varieties of *Roses* are commencing to show bloom. The barometer is now falling, and we hope to have rain.—W. W. H., *Major General*.

Pinguicula grandiflora.—This beautiful plant, commonly known as *Butterwort*, is now in flower, and thriving

well in a bog near here, and is, I think, one of the most beautiful of our native plants. The flowers are of a very brilliant purple colour with a long spur at the base. It is readily known when out of bloom by its pale fleshy leaves. Its height is about 3 to 4 inches.—W. ROBERTS, *Penzance*.

ROSE PROSPECTS.

IN the autumn of last year nothing could look better than my *Roses*; they had made strong luxuriant growth, many shoots 6 feet in length and of great substance, the foliage unexceptionably fine, and all my plants evinced health and vigour; yet from the absence of sun during the summer I confess to have entertained much doubt as to the possibility of such strong shoots of young wood becoming matured. However, all went on well throughout the winter, and even at the time of pruning, which was done during the last days of February, the wood was plump and cut tolerably well, though not so firmly as I could have wished, still there was generally no symptom of disease. In some the pith was a little darkened, which induced me to prune them a second time, and lower down. Only a few bled after this operation, and the application of a little quicklime proved an efficacious styptic. In due course—notwithstanding the long season of cold and frost, though so many growers of *Roses* were complaining of their severe losses—I congratulated myself under the belief that the careful protection and attention I had bestowed on my plants had secured them, and that I had lost none. The wood continued to have its normal appearance, and outwardly seemed firm and well developed. The plants broke well with buds, not merely at the top, but throughout the length of the stems, and were perfectly satisfactory; the foliage expanded with good natural colour and form, but towards the middle and latter part of April the leaves shrivelled up, the wood shrank and evinced all the certainty of decay, dark spots appeared in clusters, the wood blackened, and gave unmistakable proof of dying. Is this the effect of unripened wood or of frost?

I suspect we were all too sanguine as to the maturity of our strong summer growth. The long-continued frost no doubt had a most baneful effect, though so occult that its evil consequences were not suspected. I therefore agree with you, and attribute the injury to the severity of long-continued frost on the unripened wood, rendering it unfitted to encounter the strong easterly winds which up to last week have been so detrimental to all vegetables.

I always protect my plants with a thick mulching of cow manure, and this I am sure has been most beneficial. Experience now tells me I might have been more suspicious of inward constitutional injury from what I observed when pruning some of my choicest plants, and if I had had the courage to cut the shoots of all my dwarf plants down to the ground instead of leaving long shoots and allowing the sap to ascend and exhaust itself by giving them the required support, they would have broken even more vigorously from the base, and I should have had much longer and stouter wood now. I have never known any thus pruned to the ground suffer from the effect of frost or cold. How far the effects of the past winter may be felt on our summer exhibitions time only will show; certainly never before had we the promise of such a display of grand bloom.—G. BAKER, *Hohlsfelde, Reigate*.

THE mischief which "*D. Deal*," adverts to prevails here. I do not attribute it to the severe frosts of last winter, but to the long scathing east winds and the two-nights frost in April. The second of those frosts quickly followed some cold showers and sleet and caught the plants while they were suffused with "tears." These froze on the leaves and in the swelling buds, and formed icicles upon the bark stretched with flowing sap. The young leaves and shoots were shrivelled up, and the expanded bark where touched by ice was killed. The brown spots first appeared at the buds or on the part of the stem where the bark was killed by the icicle. The circulation of sap being checked the bark dies away from the site of the injury. I have had many *Rose* plants thus afflicted within the past month. Every one of them was uninjured before the nipping frost at the end of April. Plants which had not pushed out their buds into leaf are wholly unaffected, and even those branches of affected plants upon which the buds had not burst are entirely uninjured. The lesson taught is that we incite growth too early by premature pruning. Every plant which has suffered with me had been pruned

more or less and had made vigorous spring shoots, and many of them had their flower buds well—indeed too well—advanced. If the spring continues mild early pruning may be beneficial; but we are not safe from frost until after the old May-day, and it would be well to let Nature have her own mood until that time.—W. SIMONS, *Graivartren*.

[We still attribute the injury of the examples submitted to us by "D., Deal," to the severity of the frost of last winter; the sap vessels were ruptured, and the growth referred to was the result of the stored-up sap in the wood above the injured parts; this store being exhausted, the supply from the roots was arrested, and discoloration of the wood and decay followed. We have seen many examples of this even in the case of Roses that had been placed under glass where it was not possible that spring frosts could have affected them; yet frosts occurring after growth has been made are unquestionably injurious to Roses. We have other letters on this subject that will appear next week.—EDS.]

SOWING VEGETABLE SEEDS MIXED.

THERE is hardly anyone possessing a garden who does not wish to grow as many varieties of vegetables as possible, but in places where the demand is not great and the variety plan is worked on, there is often such large patches of different crops sown or planted that much produce is allowed to waste. This, at least, is my experience with such crops as Cauliflower, Lettuce, Radishes, and even Peas and Beans; but for some time now I have been sowing the seeds of these mixed, and find it an excellent plan for giving a long succession from one patch, as well as saving ground and labour. Early, mid-season, and late Peas sown together in one row give a long succession of gatherings, and a small patch of mixed Radish or Lettuce keep up a supply for a surprising length of time. In small gardens where ground is scarce this plan has much to recommend it, and anyone stating their desires to a seedsman will be supplied with all kinds of seeds mixed to suit their requirements.—M.

READING HORTICULTURAL EXHIBITION.

MAY 20TH.

THE first Show of the season was as usual held in the Abbey Ruins, Forbury Gardens, by permission of the Mayor, and proved very successful, the entries being about twenty-five in excess of last year. The general condition of the plants exhibited was especially good, several exceptionally fine specimens being exhibited among the Ferns and other fine-foliated plants. Calceolarias and Gloxinias were remarkably well grown, and together with the Roses in pots formed some of the chief features of the Show as regards the care that had been bestowed upon their culture. Numerous groups were contributed and assisted in forming a very pleasing and bright display, the arrangement of the various exhibits under Mr. Phippen's management being highly satisfactory. A few very energetic exhibitors carried off a large proportion of the chief prizes, the most successful being Mr. Mortimer, gardener to Major Storer, Purley Park; Mr. W. Lees, gardener to Mrs. Marsland, The Wilderness; Mr. E. Bennett, gardener to M. Loneragan, Esq., Cressingham; Mr. Baskett, gardener to W. J. Palmer, Esq., Reading; and Mr. Bezant, gardener to J. Simonds, Esq., Caversham. Many others also staged some very creditable collections, which will be referred to in the various classes.

Two good collections of twelve stove and greenhouse plants were staged by Mr. Lees and Mr. Mould, nurseryman, Pewsey, who were adjudged the first and second honours respectively. Those from the former were vigorous healthy specimens, their fresh condition indicating careful culture. Among the most noticeable were a neatly trained and well-flowered *Stephanotis* about 4 feet in diameter. *Franciscea calycina* major with extraordinarily large flowers of a fine rich violet-purple tint, and an even example of *Pimelea decussata* flowering profusely. Mr. Mould's plants, though smaller, were uncommonly robust, and with good attention soon become handsome specimens, *Statice profusa* and *Dipladenia Brearleyana* were admirably represented. The best collection of six was from Mr. Bennett, and included several fine well-grown specimens. Two *Aphelaxes* were extremely handsome, the flowers numerous and highly coloured; *Erica Cavendishiana* was also vigorous, and bearing large flowers. Mr. Mortimer exhibited the only collection of four, and was deservedly awarded the premier prize for fresh, healthy, and neat specimens; *Bougainvillea glabra* and a *Rhynchospermum* were excellent. For a single specimen there were six entries, and four prizes were awarded, nearly all the plants being worthy of recognition. Mr. Baskett obtained the chief prize with one of the most handsome specimens of *Tabernaemontana coronaria* we have seen. It was about 4 feet in diameter, in vigorous health, and covered

with its large white flowers. Mr. Mortimer followed with an admirable example of *Anthurium Schertzerianum*, bearing enormous richly coloured spathes; and equal extra prizes were accorded to Mr. Bennett and Mr. Hope, gardener to the Hon. R. Boyd Purley; the *Rhynchospermum* staged by the former exhibitor being highly meritorious, and would have well deserved an extra second prize.

Ferns were well represented, nearly every plant being in fine state health, the fronds possessing those rich tints of green the form such a pleasing foil to the bright colours of flowering plants. The principal class was that for nine specimens, in which ten competitors entered. Mr. Mortimer secured the premier award with handsome plants that were highly creditable to him. The best were *Adiantum concinnum latum*, about 4 feet in diameter. *A. cardiophyllum* with immense fronds, and *Leucostegia immersa* in prime condition. Mr. Bezant and Mr. Bennett followed in the order named, but the third prize awarded to the latter exhibitor scarcely did justice to his collection, which included several well-grown specimens of choice species, notably *Davallia bullata* and *Gleichenia flabellata*. Mr. Bezant's plants were larger but as quite so well selected, and the two collections were very nearly equal in merit. Messrs. Hope and Lees were the only exhibitors of four specimens, and were adjudged the first and second honours, both staged very fair plants in good condition. Mr. Davis, gardener to J. Wheble, Esq., Bulmershe, sent the only collection of twelve hardy Ferns, and secured the chief prize. His plants were very fresh and healthy, *Oncoclea sensibilis* and *Osmunda regalis* being especially noticeable. One collection of six *Selaginella* was exhibited by Mr. Mortimer, and well deserved the premier prize awarded for them. They were about 2 feet in height, of an obtuse conical form, the material over which the shoots were trained being completely hidden by the fresh green growth. The species and varieties were *S. caesia*, *S. caesia arborea*, *S. Martensi variegata*, *S. involvens*, *S. apus*, and *S. denticulata* Poulton, all good forms, admirably represented.

Fine-foliage plants were shown in excellent condition, some very handsome specimens being staged by several of the competitors. Mr. Mortimer was first with nine large and healthy plants, of which the best were *Lantana borbonica* of great size; *Lomaria gibba*, vigorous; and *Maranta Veitchii*, with fine well-coloured foliage. Mr. Lees was second with a good collection, *Alcassia metallica* and *Maranta roseo-picta* being unusually beautiful, especially the former, in which the peculiar distinctive metallic gloss was finely developed. Mr. Mould occupied the third position with smaller but healthy plants. The best collection of four came from Mr. Hope, whose plants were but little in advance of those from Mr. Bezant, both contributing handsome specimens of moderate size.

Pelargoniums, especially of the show varieties, were well represented, and some of the plants were as healthy and well flowered as any we have seen this season. In the two classes for the show varieties Mr. Ashby, gardener to W. Fanning, Esq., Whitechurch, gained the chief prizes with beautiful fresh specimens; *Trompette de St. Mandé*, Duchess of Edinburgh, Mabel, and Ruth were the most profusely flowered. He was followed by Mr. Mortimer in the class for four with neat and well-grown plants. Mr. Burgess, gardener to Colonel Clayton, Maidenhead, and Mr. Baskett were the only exhibitors of fancy varieties, and were awarded the prizes in the order named for compact fairly well flowered plants.

Gloxinias were remarkably fine, and two more handsome collections of six than those exhibited by Messrs. Hope and Baskett could scarcely be desired. The flowers were numerous, large, very symmetrical in form, the colours clear and bright, and the plants healthy and compact, those from the latter exhibitor, who was placed second, chiefly differing from the others in their somewhat smaller size, but the grand variety, Lord Derby, was shown in admirable condition. Mr. Hope's premier plants were grown from seed supplied by Messrs. Sutton & Sons, and bore evidence to the excellence of the strain. They were each bearing about two dozen fully expanded flowers.

Calceolarias were also numerous, and by far the best we have seen at any exhibition this year. There were six competitors, and the Judges recognised the merit of the exhibits by awarding four prizes. Mr. Tomlin, gardener to Miss Patterson, Ascot, won the chief position with handsome compact plants bearing large trusses of beautifully formed and highly coloured flowers. The foliage was extremely healthy, and although not of great size they were admirable examples of superior cultivation. Mr. Baskett, who followed, staged somewhat smaller but luxuriant plants, the flowers being larger and nearly equally well coloured, equal thirds being adjudged to Mr. Baskett, gardener to G. W. Palmer, Esq., and Mr. Burgess for neat specimens in 48-size pots.

Azaleas were not numerous nor very well flowered. Mr. Bennett's premier collection of nine was the only one in the class, and his specimens although well grown were bearing few flowers, with exception of *Charmer*, which was represented by a specimen 7 feet in height covered with large richly coloured blooms. Mr. Armitage, gardener to N. Clarke, Esq., Reading, staged the best six, very neat specimens in 82-size pots, about 2 feet in height and

bearing enormous flowers. Marquis of Lorne and Jean Verschaffelt were especially noticeable. Mr. Lockie's plants had not quite so many flowers, but they were very compact and good.

Three good collections of half a dozen Roses in pots were shown by Messrs. Lees, Mould, and Baskett, who obtained the prizes in that order for healthy specimens. Mr. Lees' plants were vigorous and bearing blooms of great substance, especially Jules Margottin and John Hopper. The plants in the collections of four were rather small and not in first-rate condition.

Groups of plants were exhibited by six competitors, two large groups, and four in the class for one of smaller size. Mr. Lees was first with a large and tastefully arranged group of plants. Mr. Burbidge, gardener to B. Simonds, Esq., Reading, followed with a pretty arrangement, the prizes in the other class being secured by Mr. Pound, gardener to G. May, jun., Esq., Reading, and Mr. Burgess.

Cut flowers were shown in beautiful condition, and were very numerous. Messrs. Mortimer and Bennett, and Mr. Atkins, gardener to Col. Lloyd Lindsay, M.P., Lockinge Park, were the principal prizetakers, all staging excellent examples of the best stove and greenhouse flowers. Mr. Tranter, Upper Assenden, was an excellent first with twelve cut Roses, his collection including several very handsome flowers, notably Maréchal Niel, Duchess of Connaught, La France, and Etienne Levet. Mr. Lees and Mr. Lockie followed also with good blooms. Mr. Tranter obtained an extra prize for a box of cut Roses which contained extremely fine examples of Maréchal Niel. Bouquets, buttonholes, and vases of flowers occupied three large tables, some of the chief prizes being as usual obtained by Mr. and Miss Phippen of Reading with very tasteful arrangements.

Fruit was not abundant, but of good quality. Strawberries were well shown by Mr. Mortimer, who staged a magnificent dish of President, large, even, well ripened, and rich colour. He obtained the first prize in the class, and also an extra for a number of fruits of the same variety nearly as good. Mr. Tranter was second with very large and good fruits, but not so well finished. Mr. Ashby was first in both the classes for Grapes with good bunches of Black Hamburg and Buckland Sweetwater well coloured, Mr. Atkins following with smaller bunches not quite so well ripened. Mr. Ashby also staged the only dish of Early Ascot Peaches of good size and colour.

Vegetables were numerous, Cucumbers being especially well represented. The competition for the prizes offered by Messrs. Sutton & Sons was very keen, there being ten entries, and the fruit was of such even quality that it must have been rather difficult to judge. Mr. Lockie was first with good clean examples of Suttons' Masterpiece; Mr. Mortimer second with Suttons' Model, also good; and Mr. Ilwrick, gardener to V. B. Vander Weyer, Esq., Windsor Forest, with Suttons' Duke of Connaught. The best general collection of vegetables was from Mr. Lockie, including a selection of admirably grown Potatoes; Carrots; Cabbages, Leeks, &c. Mr. Read, gardener to F. Wilders, gardener, Burley Hill, and Mr. Perkins, gardener to A. O. Forbes, Esq., Whitechurch, were awarded equal second prizes for healthy specimens. In Potatoes, Beans, and Peas Mr. Lockie, Mr. Bellis, and Mr. Miller, gardener to the Marquis of Donegal, were the chief prizetakers for good examples of the approved varieties.

The day proved very fine, and in consequence a large number of visitors attended, thus rendering the Exhibition a success in every way. Great credit is due to the Secretary, Mr. G. W. Webb, for the efficiency of all the arrangements considering that he is new to the arduous duties of his post.

ARISTOLOCHIA GOLDIEANA.

THE Birthworts constitute an extraordinary genus, which is invested with unusual interest owing to the structural peculiarity and strange colours of the flowers; but the most remarkable of all the known species is undoubtedly the one named above, that might be justly ranked among the wonders of the vegetable world. Twice only have the flowers been produced in this country—first in 1867 at the Glasgow Botanic Garden, and at the present time in the stove at the Royal Botanic Gardens, Kew, where a specimen has borne two flowers, one having been removed, and the other is only just expanding. Those who are interested in such strange productions would be well repaid by a visit to the Gardens, especially if they are fortunate enough to see the flower fully expanded. The species is a native of West Africa, where in 1857 it was discovered growing in a dry situation by the Rev. Hugh Goldie, a missionary. About seven years later preserved specimens were sent to Sir Joseph Hooker by Mr. Goldie's fellow traveller, the Rev. W. C. Thomson, who also sent living plants to Mr. P. Clarke, Curator of the Botanic Gardens at Glasgow, where, as mentioned above, it was first induced to produce its gigantic flowers. These were of startling dimensions, but the first one on the Kew plant was certainly not smaller, and the one now slowly expanding is likely to be equally as large.

It is almost impossible to convey an adequate idea of such a flower by words alone, but the following brief description may enable those who are unacquainted with it to form some conception of its peculiarity. In general form the flower is distinct from such as *A. odoratissima*, *A. ornithocephala*, and others, and may almost be considered as a very greatly exaggerated *A. clematitis*. From the peduncle there extends a straight cylindrical tube about 8 inches in length, which then forms a large protuberance and is suddenly reflexed, ascending and gradually expanding into an enormous funnel-like perianth, which is slightly three-lobed, the tubes terminating in narrow tails an inch or two long. This huge funnel when fully matured is about a foot in diameter and of considerable depth, so that a hat of ordinary size can be placed within it. The strange colouring of the inner part of the perianth also adds to its extraordinary appearance, and rivets the attention of the observer. The ground colour is a dull yellowish orange, closely reticulated with peculiar dark red thick veins, a combination of tints and markings most strikingly original. The outer surface is of a pale yellowish-green hue tinged with purple, from which stand out numerous large red veins. The odour, like that of many other species, is extremely repulsive, being strongly suggestive of putrid meat. The plant is of climbing habit, and attains the height of 20 feet, but the specimen at Kew is only a small one, bearing heart-shaped, bright green, slightly glaucous leaves, similar to those characterising the genus. There are some other structural peculiarities which distinguish *A. Goldieana*—namely, the possession of twenty-four stamens instead of the usual six, a twelve-lobed stigma, and a three-lobed perianth, but some of these characters are also found in two other African species.

Such is one of the most remarkable plants in cultivation, and one that in size can only be considered second to the celebrated parasitical *Rafflesia Arnoldi*.—L. CASTLE.

LATE LEEKS.

AT the present time when Peas, Kidney Beans, and other choice vegetables are hardly ready for use, those who have to supply a great variety of dishes are glad to get anything good by way of a change, and for this purpose few things are more acceptable than Leeks. We have a quantity of them now with the eatable part about a foot long and as thick as one's wrist, and when well cooked they are really delicious. I know as a rule Leeks are considered so common that many think they are not worth growing or having, but this is quite a mistake. Now is the time to sow seed to have a good crop next May. When the plants are large enough they may be dibbled about 6 inches apart in a rich piece of ground. For late use they need not be earthed-up until winter approaches, when any old light soil or decayed refuse should be spread amongst the plants to the depth of 6 inches or more. In a week or two after this they will be in prime condition for use at table.—K. G.

ROYAL HORTICULTURAL SOCIETY.

MAY 25TH.

ONE of the most extensive and beautiful meetings held during the present year was that of the above date, when a very large number of plants were staged both in the Council-room and the western arcade beyond the conservatory. Among the handsome groups exhibited by the nurserymen the chief attractions were the grand Roses from Mr. C. Turner of Slough, which as arranged along one side of the arcade contributed a display of extraordinary merit. Many other collections of unusually fine plants were contributed; the new plants in Council-room also attracted considerable attention from the numerous visitors. All the groups in the arcade remained on view until after the conversations, which took place on Wednesday night.

FRUIT COMMITTEE.—Henry Webb, Esq., in the chair. Mr. S. A. Woods, gardener to F. J. S. Foljambe, Esq., Osberton Hall, Worksop, sent a seedling Melon called "Luscious and Melting," but it was too ripe to enable the Committee to form an opinion on its merits. A red-fleshed Melon was sent by Mr. Gilbert of Burghley Gardens, Stamford, called *Excelsior*, but it was not of sufficient merit to gain a certificate. Mr. McDoe, The Gardens, Hutton Hall, Guisborough, sent a seedling Melon called *Marcellus*; it is a white very firm-fleshed variety, but of very little merit. Mr. Miller, The Gardens, Clumber, sent a dish of Dr. Hogg Strawberry, and a letter of thanks was awarded. Mr. John Simms, gardener to W. B. Eastwood, Esq., Kingswood, Englefield Green, sent Strawberry President, twenty-four fruits weighing 2 lbs. A cultural commendation was awarded. Mr. F. H. Froude, gardener to C. G. Lockhart, Esq., The Elms, St. Albans, sent a dish

of Mushrooms grown in a disused cattle shed without any artificial heat. A letter of thanks was awarded. Mr. Walter Child, gardener, Croome Court, Worcester, sent two Cucumbers, the result of a cross between Duke of Edinburgh and Tender and True. It was not considered superior to others in cultivation. Mr. J. Ledsham, Green Lane, Chester, again exhibited his Broccoli, but as there were no others to compare with it no decision was come to.

FLORAL COMMITTEE.—Dr. Denny in the chair. In the Council-room numerous collections of plants were staged, especially noticeable being the group of new plants and Gloxinias from Messrs. Veitch & Sons, Chelsea. Mr. B. S. Williams, Upper Holloway, contributed a collection of hybrid Nepenthes, distinct and good; also several other new plants. A vote of thanks was accorded to the General Horticultural Company for a group of new Gloxinias, one of which, rich purple with a white throat, was especially noticeable. G. Neville Wyatt, Esq., Lake House, Cheltenham (gardener, Mr. Simcoe) sent a handsome specimen of *Odontoglossum vexillarium*, bearing fourteen long racemes of large deeply coloured flowers, over one hundred of which were fully expanded. The great merit of this fine specimen was recognised by the Committee, who recommended the award of a silver medal. A raceme of *Odontoglossum Alexandræ* bearing extremely large flowers was also shown, and a vote of thanks was accorded. Mr. Goodacre, The Gardens, Elvaston Castle, Derby, had some small Stephanotis in thumb pots, bearing from four to six trusses of flowers. The shoots were trained over an arched stick, and the value of such plants for decorative purposes can scarcely be overestimated. A vote of thanks signified the Committee's recognition of their merit. Mr. Braid of Winchmore Hill exhibited a group of decorative Pelargoniums. Messrs. Laing & Co., Forest Hill, sent a collection of dwarf compact Calceolarias and handsome seedling Begonias. Mr. Yeary, gardener to the Earl of Portsmouth, Eggesford, Devon, staged a variety of *Betula alba* with "golden" variegated foliage. Messrs. J. Garaway & Co., Durdham Down Nurseries, Bristol, sent a Horse Chestnut with yellow and green variegated leaves. Messrs. Saltmarsh & Son, Chelmsford, had a group of seedling Begonias, and Mr. Henry Hooper of Bath exhibited a collection of Pansy blooms; and a vote of thanks was accorded to M. Bergman, gardener to Baron de Rothschild, Ferrières, France, for a fruit of *Encephalartos Altensteinii*, which was about 2 feet long and 1 foot in diameter, cylindrical, and apparently full of seeds. Messrs. Carter & Co., High Holborn, sent plants of *Mimulus Ruby* with very large flowers, and a collection of *Neriums* was brought from the Society's gardens at Chiswick, with a number of cuttings struck in silver sand and in Cannell's sea sand, there being but little difference perceptible between the two batches, but those in the sea sand appeared in some instances slightly more vigorous.

First-class certificates were awarded to the following exhibitors for the undermentioned plants:—Messrs. Veitch & Sons, for Clove Carnation Sir Archibald Grant, a variety with neat flowers of a rich deep maroon colour; and *Erigeron pulchellus*, a pretty little Composite with long narrow leaves and orange-coloured capitula. The three following are described in another column:—*Lastrea Maximowiczii*, *Trichomanes parvulum*, and *Yucca filamentosa aurea elegantissima*; Mr. W. Bull, Chelsea, for *Cereus C. M. Hovey*, a variety with very large rich purplish-crimson flowers; Mr. B. S. Williams, for *Nepenthes atro-sanguinea*, a hybrid with pitchers of moderate size, elegant form, and richly coloured; Mr. J. Braid, Winchmore Hill, for a decorative Pelargonium named *Defiance*, with large scarlet pink-shaded blooms borne in good compact trusses; Messrs. Laing & Co., for a white Begonia named Mrs. Laing, described in another column; Mr. Brown of Hendon for Pelargonium *Attraction*, a variety with neat flowers of an unusually rich crimson-scarlet hue in trusses of great size; Mr. W. Miles, West Brighton, for a new Zonal Pelargonium named *West Brighton Gem*, which is dwarf and compact in habit, with fine trusses of bright scarlet flowers somewhat in the way of *Vesuvius*.

Taking the groups in the order they were arranged in the western arcade, the first to be noticed was the group from Mr. B. S. Williams, which was particularly interesting from the large number of new and choice plants it contained. Fine-foliage plants, such as Crotons, Dracenas, Ferns, and Palms, were well represented, Orchids, Amaryllises, and Anthuriums contributing a very bright effect. The beautiful *Dendrobium Parishii* on the stump of a Tree Fern was bearing a profusion of its purplish flowers, *D. tortile* also being shown in fine condition with its peculiar scoop-shaped lip and twisted sepals and petals. *Aërides Fieldingii* had three fine spikes of flowers, and several others were also noticeable. The pretty *Burcyclus Cunninghamii* had two umbellate scapes of neat white flowers, in the centre of each being a small yellowish tube. A pan of carnivorous plants was exhibited, including *Droseras*, *Sarracenias*, *Darlingtonias*, and *Cephalotus* in excellent health; while Amaryllises, and such handsome Crotons as *Williamsi*, *Disraeli*, *Rex*, and *Evansianus* were uncommonly fine. *Microlepia hirta cristata* was well represented with a number of Dracenas, &c. A gold medal was awarded for this fine group. The General Horticultural Company also secured a gold medal for a large and extremely elegant group arranged in a light pleasing style. The background was composed of handsome Dracenas,

Crotons, and Palms, with rows in front of Gloxinias, and Hair Ferns intermixed. About sixty plants of Gloxinias exhibited, nearly all distinct, and including some remarkable varieties in colour, size of flowers, and substance. In the centre of the group was a good specimen of *Scutellaria Nocciana* well flowered.

An enormous bank of Roses was exhibited by Mr. Turner of Slough, including about fifty specimens. They were in superb condition, the half-dozen enormous specimens appeared to such advantage at Regent's Park last week as anything, in still better form. The giant of the group was a central huge example of Charles Lawson, 6 or 7 feet high and same in diameter, extremely well flowered. The other noticeable plants were Edouard Morren, grand; John Small, extremely bright; Duke of Edinburgh, rich colour; Céline Holtier, profusely flowered; Paul Verdier, very fine; Jumbo, bearing great number of flowers; and Camille Bernardin, fine flowers, good colour. For this magnificent collection of Roses a large Banksian medal was deservedly awarded. Messrs. Wm. Cobb and Son of Highgate contributed an elegant group of plants which two very fine specimens of *Statice Hoffordii* were especially noticeable for the rich colour and profusion of the flowers. Healthy examples of the handsome *Araucaria excelsa glauca* were also conspicuous. Small Ferns, *Ericas*, *Coleuses*, and *Calceolarias* formed the margin. A silver Banksian medal was accorded to the Committee. Mr. Wm. Miles, West Brighton Nursery, adjudged a bronze Banksian medal for a group of his *Hybrid Mignonette* in excellent condition, very vigorous and compact with long spikes of extremely fragrant flowers. Examples of a new Zonal Pelargonium named *West Brighton Gem*, referred to above, were also shown. A silver Banksian medal was accorded to Mr. Aldous, South Kensington, for a pretty group of miscellaneous plants; and Mr. Prewett, nurseryman, Hammersmith, sent three boxes of very large and handsome *Maréchal Niel* Ran for which a vote of thanks was accorded.

The only amateur's group of plants was the beautiful collection of Calceolarias and Mignonette from Mr. J. R. Bird, gardener to J. G. Canston, Esq., Lodgemore, Alleyn Park, West Dulwich, which a silver-gilt Banksian medal was deservedly awarded. The Calceolarias were uncommonly excellent both in habit, size, form and colours of the flowers, and general vigorous healthy condition. The Mignonette was grown in 24-size pots and trained as standards about 3 feet high, with a conical head covered with long spikes of flowers. The plants were fifteen months old, and evinced careful attention to their requirements. The last group along the arcade was one from the Society's garden, containing a number of Pelargoniums, handsome Saxifrages, Gloxinias, Ferns, &c., well grown and tastefully arranged.

SUTTONS' LATE QUEEN BROCCOLI.

WHERE Broccoli is of the choicest descriptions are raised at the present time, a large patch of the above variety should be cultivated. With us it is the dwarfest growing, least spreading, and most handsome of all. The late severe winter failed to injure the plants in the least, and they have come in true to their time, which is more than can be said about the generality of Broccoli in these changeable seasons. The heads do not attain that monstrous size which is often wrongly supposed to be a sure indication of high culture and merit, but they all appear of medium size and about as white as an early spring Cauliflower. Seed should be sown now to insure a supply of these delicious heads at this time next year.—J. MUIR, *Maryland*.

NOTES AND GLEANINGS.

AT a general meeting of the ROYAL HORTICULTURAL SOCIETY, held on Tuesday last, William Haughton, Esq., in the chair, the following candidates were duly elected *Fellow-Exhibitors*, William Phipps Boileau, Ashley Francis Brereton, George H. Brooks, William Brown, Clifford W. Chaplin, Mrs. Clowes, Thomas Fletcher, Miss May Forsyth, E. F. B. Fuller, Countess Howe, Walter Guy Coffin Kirkwood, J. L. Matthews, Mrs. Montagu McMurdo, Lieut.-General Sir Henry Norman, Christopher Pond, Mrs. Pond, Miss Pond, John Scott, Mrs. Scott, William S. Staff, Captain McTaggart, Edward H. Woodall.

THE present month has been remarkable for its ABSENCE OF RAIN, the quantity recorded being only the fractional part of an inch in the London district. In April only a little over an inch fell; since the commencement of the year only 5 inches and from September last until the present time the total rainfall for the period of nearly eight months does not exceed 7 inches. This is an unusual period of drought, and compensates for the excessive rainfall of last summer. The ground now is extremely dry, and vegetable crops move slowly, while recently planted flowers are in a standstill state. On Clapham

common, where the soil is light, the grass is as brown as in the height of summer; and in the gardens on the Thames embankment the hose has had to be employed to refresh the rubus and cleanse them from the accumulation of dust. Rain as fallen in Kent and other districts, but up to the date of going to press there is little sign of a much-desired shower refreshing the parks and gardens of London.

— OUR correspondent Mr. W. Bardney refers approvingly to DUC DE MALAKOFF STRAWBERRY FOR FORCING, each plant of which produces from twenty to twenty-four fruit. A sample of the fruit has been sent to us. It is very fine, well coloured, and highly flavoured, and fully justifies Mr. Bardney in forming a favourable estimate of this variety for the purpose indicated.

— WE have received further specimens from Mr. Ledsham, Green Lane, Tarvin Road, Chester, of his LATE PROTECTING BROCCOLI. The heads are larger than those referred to on page 374, and are close, white, heavy, and of excellent quality.

— THE following is a list of the HORTICULTURAL SHOWS to be held during the next four or five weeks, of which we have received schedules up to the present. May 29th, Crystal Palace; June 2nd, Bath and West of England (Worcester); June 8th, Great show at Kensington (four days); June 10th, Essex (Mistley Park); June 13th, Dieppe, France; June 16th, Royal Botanic Society and York Floral Fête (three days); June 18th, Scottish Pansy Society (Edinburgh); June 22nd, Hants and Berks (Portsmouth, four days); June 23rd, Doncaster (Agricultural), Leeds and Burton-on-Trent; June 26th, Reigate (Roses); June 26th, Rose and Pelargonium Show, South Kensington; June 30th, Royal Botanic Society, Evening Fête; Farningham (Roses), Croydon, and Beverley.

— "SOME of your readers," writes "RUS," may like to know that *Dendrobium Wardianum* can be propagated almost as rapidly as *D. nobile*. I have some young plants growing freely in sphagnum.

— A FLOWER SHOW open to all comers will be held at Dieppe on Saturday the 5th of June. Spacious houses and tents have been erected in the garden of the Hotel de Ville, and every accommodation will be given to exhibitors. Valuable prizes will be given, including many gold and silver medals; and by the kindness of the London, Brighton, and South Coast Railway exhibits will be returned free of carriage. The schedule includes forty-seven classes for flowers, fruit, and vegetables. Exhibits to be addressed to the President of the Horticultural Society of the Seine Inférieure, Dieppe, who states that "The French gardeners have drawn so much upon their English colleagues for supplies of plants this year, that it may be an advantage to some of your countrymen to exhibit at this Show."

— ONE of the oldest customs known in the north of England was celebrated last week at Levens, near Kendal, a country seat of General the Hon. Arthur Upton. On each 12th of May a "RADISH FEAST" is held in the extensive grounds adjoining Levens Hall, which is attended by the Mayor and Town Council of Kendal. Several tables in the grounds are spread with "haver bread," butter, and Radishes, hundreds of visitors being admitted by tickets given to respectable applicants. The tables cleared, the usual custom of "colting" new visitors is proceeded with. Brought into a ring the neophyte is required to "drink the constable"—a half-pint of remarkably strong malt liquor—standing on one leg, and pledging the ancient house of the Howards in the words, "Luck to Levens as long as the [river] Kent flows." Declining or failing to accomplish the feat, a forfeiture of a shilling in each case benefits the under gardeners. Athletic sports follow. The origin of the custom is unknown, but is believed to date from feudal times.

— A CORRESPONDENT, Mr. W. W. Gascoyne, asks if our readers will kindly furnish information as to the success of the GLASS PROTECTORS on the top of walls in the case of Peaches, &c., during the last three or four years, as "even in the extreme south of England such fruit on open walls has scarcely been worth growing."

— ONE of the finest collections of CALCEOLARIAS that we have seen in a private garden belongs to Mr. Brand of Bedford Hill House, Balham; the strain having been formed after several years of careful crossing by Mr. Rapley, Mr. Brand's able gardener. The plants occupy a stage about 5 feet wide and 100 feet long. They are mostly in 6 and 7-inch pots, and are remarkable for their sturdy character, massive heads,

and large and richly-coloured flowers. Some of the flowers a week ago were 2½ inches in diameter, and extremely full and smooth. Conspicuous amongst them are some yellow selfs of great size; the crimson selfs also are very intense in colour, while the spotted varieties are varied and clear. The most meritorious feature, however, is not a few varieties of exceptional merit, but a marked absence of flowers that can be regarded as of commonplace character. Both as regards the quality of the flowers and the excellent cultivation of the plants this collection is worthy of note, and of the Royal Horticultural Society's silver medal that was granted for some of the plants exhibited at South Kensington a fortnight ago.

— MESSRS. E. H. KEELAGE & SON of Haarlem inform us that they expect to shortly receive a consignment of the elegant NARCISSUS CANARIENSIS, which is not in cultivation in this country. It is a species with very small flowers, but is very graceful and attractive, and has been described as "one of the most elegant forms of a very beautiful group." It is identical with the *Hermione canariensis* of Herbert.

— WE learn from the schedule of the ABERDEEN ROYAL HORTICULTURAL SOCIETY that the summer and autumn exhibitions will be held towards the end of July and the end of September respectively, the exact dates having yet to be announced. The classes are extremely numerous, about 160 being provided for each show, representing plants, flowers, fruits, and vegetables.

— THE author of the "POTATO DISEASE AND HOW TO PREVENT IT," referred to in our last issue, has received a letter from a gentleman in Argyleshire who is the owner of some of the detached islands in Scotland, informing him that experiments on a large scale are going to be carried out for the extinction of the disease according to the directions indicated in the volume in question. We should be glad to hear of the results of this experiment.

— THE remarkably handsome COLEUS GEORGE SIMPSON which was exhibited at the Royal Horticultural Society's Meeting on April the 27th by Mr. J. King, gardener to G. Simpson, Esq., Wray Park, Beigate, and honoured with a first-class certificate, will, we learn, shortly be sent out by Messrs. J. Veitch & Sons, Chelsea. This variety is unquestionably one of the finest that has appeared for some time, and was greatly admired at the meeting above referred to. The leaves are neatly formed, of good size, the colour being an intensely rich crimson, blotched and dashed with maroon, the margin crenated, yellow and green. It is extremely distinct, and will serve to re-awaken an interest in Coleuses.

— MR. J. CAVAN FOX of South Kensington having erected some SUMMER HOUSES at Marlborough House and Sandringham, which having given great satisfaction, Mr. Fox has received the warrant of appointment as rustic summer-house builder to H.R.H. The Prince of Wales.

— AT the ROYAL HORTICULTURAL SOCIETY'S MAY SHOW, held in Dublin last week, the cup for Roses in pots was, says the *Irish Farmers' Gazette*, won by Rev. Frederick Tymons with one of the finest groups ever placed on the exhibition stage, his specimens being, without exception, profusely bloomed and the flowers of great size and substance; especial mention being due to his plants of Marquis de Gibot, Jules Margottin, Gloire de Dijon, and La France, the last-named being the gem of the group. Lord Justice Fitzgibbon took second place with a well-grown group, the plants being fairly grown and well flowered. Mr. Tymons was also placed first with a grand stand of twenty-four cut blooms.

— MR. B. S. WILLIAMS' HYBRID NEPENTHES exhibited at South Kensington on Tuesday last included several very beautiful forms, the pitchers being neat in shape and richly coloured. The following are their names:—*Nepenthes Laurenciana*, *N. compacta*, *N. coccinea*, *N. Henryana*, *N. Dormaniana*, and *N. atrosanguinea*, the latter being certificated.

— THE usual monthly meeting of the METEOROLOGICAL SOCIETY was held on Wednesday evening the 19th inst. at the Institution of Civil Engineers, Mr. G. J. Symons, F.R.S., President, in the chair, when after the election of Fellows the following papers were read:—1, Variations in the Barometric Weight of the Lower Atmospheric Strata in India, by Professor E. Douglas Archibald, M.A., F.M.S. 2, A Sketch of the Winds and Weather Experienced in the North Atlantic between lat. 30° and 50° during February and March, 1880, by Charles Harding, F.M.S., with special reference to H.M.S. "Atalanta." 3, On the Meteorology of Morufurpore, Tirhoet, for the year

1879, by Charles N. Pearson, F.M.S. Mr. D. Winstanley also exhibited his solar radiometer.

HYSSOP.

SINCE the appearance of the note on page 392 referring to the Rev. Dr. Whittemore's flower sermon, we have had several

inquiries concerning the plant mentioned under the name Hyssop. In consequence we give an illustration of *Capparis spinosa*, which is now usually regarded as the Hyssop of Scripture, although there are still some differences of opinion on the subject. The word Hyssop occurs in the Old and New Testaments, but it is by no means clear that the same plant is referred to in each case. It is probable, however, that



Fig. 58.—CAPPARIS SPINOSA.

Hyssop of St. John is the Caper bush, which is abundant on the old walls around Jerusalem.

Capparis spinosa is a shrub which attains the height of 4 feet, with spiny branches and small leaves. The flowers are well represented in the accompanying woodcut, and are rendered very attractive by the numerous purple stamens (alluded to as "tassels" by Dr. Whittemore) clustered in the centre. This

plant yields the capers (unexpanded flower buds) of commerce, and is extensively cultivated in some parts of South Europe, where we have seen it flowering with great freedom. It has also been grown in England for many years, but only in houses as a curiosity, and usually it does not succeed very well under culture in pots, nor produce flowers of the usual size. Several plants are to be found in the Royal Gardens, Kew, which

serve their character well. It was probably first grown in England by Gerarde—namely, about 1596. Other plants have been regarded as the Hyssop but without sufficient evidence, especially *Origanum aegyptiacum*, *Hyssopus Ricinalis*, and *Phytolacca decandra*.

DIPLADENIA PROFUSA.

To such species and varieties of this beautiful genus as

D. amabilis, *D. amoena*, *D. Brearleyana*, *D. insignis*, and *D. splendens* Mr. B. S. Williams now adds another, which is represented in the annexed engraving, and described as follows in the catalogue of new plants recently issued from the Victoria and Paradise Nurseries, Holloway:—"This grand species will prove invaluable as an exhibition plant, being very floriferous in character, blooming when very small, and lasting a long time in perfection. The flowers are 5 inches in diameter, rich carmine, of fine substance, produced abundantly in bunches

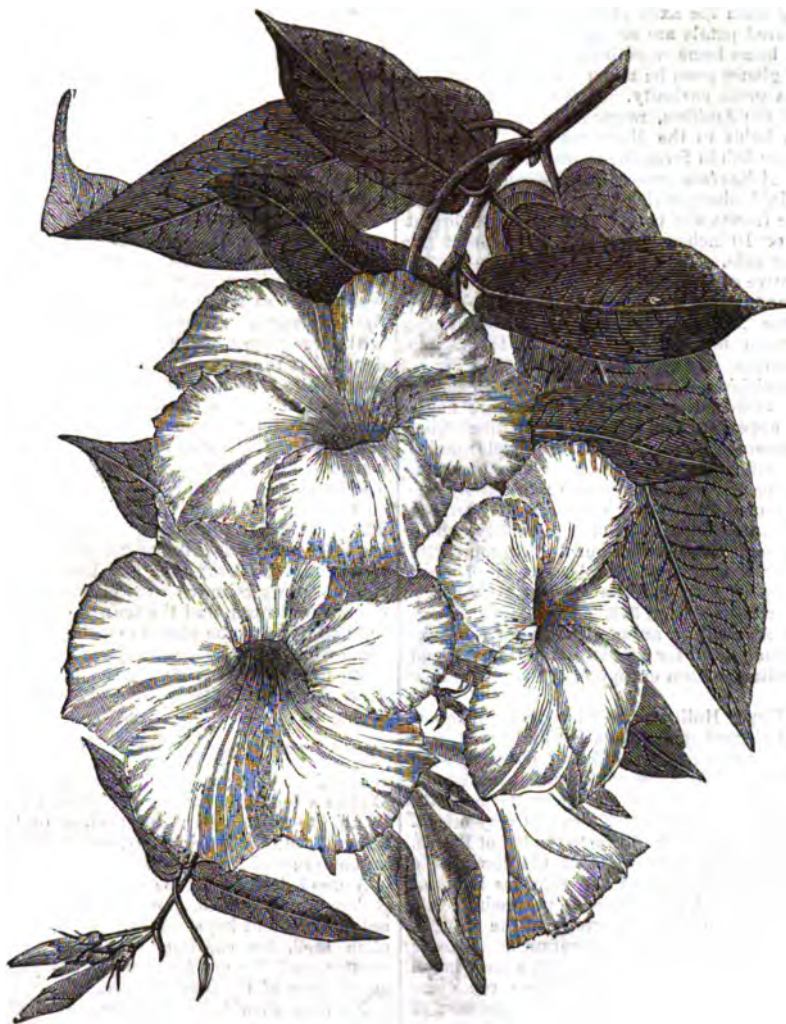


Fig. 59.—*DIPLADENIA PROFUSA*.

from the axils of the leaves. This species has the best constitution of any *Dipladenia* we have grown, keeping its foliage nearly all the season. There is no plant more beautiful than the *Dipladenia*, lasting as it does four to five months in flower. It is very useful for cut-flower work, and lasts a long time in water. Its flowers may be taken from the plant without cutting the stem, as many flowers are produced from the same spike. For training along the roof of a stove as a climber the *Dipladenia* is unsurpassed." The new form will prove a welcome addition to a class of plants which all should grow

who have the means of doing so, for few plants give a better return for the cultural care bestowed upon them.

NEW PLANTS AT THE REGENT'S PARK SHOW.

LARGE numbers of new plants were exhibited at the Royal Botanic Society's Show on the 19th inst. which we were unable to notice in our report, as the certificates were not awarded sufficiently early. Many were extremely interesting and attractive, some possessing qualities that will undoubtedly

render them popular favourites; and others were botanical curiosities or rarities that would be appreciated only by few. Messrs. J. Veitch & Sons, Chelsea, had a large group of new plants, of which no less than eleven were honoured with certificates—namely, *Burbridgea nitida*.—This is an ally of the Ginger, and was introduced from Borneo by Mr. Burbridge, after whom it was named by Sir Joseph Hooker, who considered it sufficiently distinct to constitute a new genus. It is about 18 inches high, with ovate shining leaves, and terminal clusters of bright orange-coloured flowers that are very freely produced. It is a rather showy plant for the stove, and apparently easy of culture. *Crinodendron Hookeri*.—A remarkable plant, that is related to the common Lime tree, and is known in Chili, its native country, as Chequehue. The leaves are narrow and acute, the flowers being borne singly on peduncles that spring from the axils of the leaves. The fine fleshy, deep rose-coloured petals are arranged so as to form a conical flower, which bears some resemblance to a small Rose bud, or might at first glance even be taken for a ripe fruit. It is very distinct, and a great curiosity. *Pothos oxi tocaulis*.—A peculiar member of the Aroides, remarkable for its resemblance in foliage and habit to the *Marcgravia*. The leaves are dark green and roundish in form, the stems clinging closely to any flat surface. *Adiantum monochlamys*.—An attractive Japanese species of Maidenhair, which bears some resemblance to *A. venustum*. The fronds are very elegant in form, bright green, and about 9 or 10 inches long, with pinnae that are deeply serrated on one side. *Trichomanes parvulum*.—A very diminutive representative of this pretty genus, with extremely dark green fronds, scarcely half an inch in length, with evenly cut margins. *Lastrea Maximowiczii*.—A native of Japan, with neat shining green bipinnate fronds. It is of good habit, and well deserves the attention of Fern-growers. *Lastrea Richardi multifida*.—An elegant New Caledonian Fern, with bipinnate fronds, the pinnae of which are finely crested. In general appearance it is not very distinct from the crested forms of several species. *Oncidium concolor majus* and *Odontoglossum vexillarium splendens* were two beautiful forms of these useful species, the latter being remarkably fine in the size and colour of the flowers. *Gloxinia Coronet*.—A floral certificate was granted for this handsome variety, which has large symmetrical erect flowers, rich purple in colour, with a white margin thickly dotted with purple. It is of good habit, and flowers very profusely. The strange *Anthurium Rothschildianum*, described on page 373, also received a certificate, as did *Yucca filamentosa aurea elegantissima*, an extremely long and imposing name for a small plant that differed but little from the ordinary form except in the slight yellow tinge of the foliage.

Mr. B. S. Williams, Upper Holloway, exhibited several choice plants in his large and elegant group, and the Judges selected the following as worthy of certificates:—*Croton Warrenti*.—An extremely distinct and beautiful form, with pendulous narrow spiral leaves about 3 feet in length and strangely marked with crimson, yellow, and green in different shades and very bright. *Ixora Pilgrimi*.—A very handsome addition to the list of *Ixoras*, chiefly remarkable for the deep rich colour of the flowers, the size and compactness of the heads, and the vigorous habit of the plant. *Maranta Gouletii*.—A pretty species, possessing ovate leaves marked with a wide ring of dark green at the margin, the centre having a somewhat shining appearance. *Begonia Van der Meulen*.—This has very large leaves with a dark green centre and lighter margin, a slight silvery tinge rendering it highly attractive. *Lycopodium ulicifolium*.—Suggestive of the well-known species *L. taxifolium*, the stems being pendulous and bearing long acicular bright green closely set leaves.

Messrs. Henderson of Maida Vale contributed a group which contained large numbers of interesting plants, some that have been long in the country, but are rarely seen except in such collections as those at the Pine Apple Nurseries. Several novelties were also shown, and certificates were awarded for the under-mentioned. *Rose Little White Pet*.—This plant was greatly admired, and is unquestionably one possessing many attractions. It is a variety of the well-known Fairy Rose, which it resembles in habit, but the flowers are white, of good form, and produced most profusely. As shown in 48-size pots the utility of the plant for decorative purposes was clearly indicated. *Asparagus consanguineus*.—A form of considerable merit, with similar delicately divided leaves to those that distinguish several other species. The colour is a rich bright green, and this combined with the elegance of habit will render the plant valuable for

cutting or decoration. *Begonia Jules de la Haye*.—One of the ornamental-foliage varieties of the Rex section, of medium size, and characterised by having silvery leaves margined green. *Sarracenia flava ornata*.—A variety bearing a pitchers veined with red in the upper portion, and *Lycopodium ulicifolium*, referred to among Mr. Williams' plants, were certificated.

Mr. W. Ball of Chelsea, as usual, sent several handsome ties, and these with his tasteful groups added considerably to the beauty of the Exhibition. Certificates were accorded to the following fine plants:—*Masdevallia bella*.—This species is one of those that resemble the extraordinary *M. Chmielewskyi*, but though less peculiar it certainly has a share of that species' strange characters in the long-tailed and chocolate-mottled sepals. *Microstylis calophylla*.—The "beautiful-leaved" *Microstylis* is well named, for the foliage is more attractive than the flowers. The ground colour of the leaves is a deep bronzy lighter near the margin, and reticulated with fine veins. It is a dwarf terrestrial Orchid. The genus is closely allied in structure to *Malaxis*, but chiefly resembles *Liparis* in habit. *Croton Chelsooni* has narrow drooping leaves, but was not in first-rate condition, and will probably improve. *Sarracenia flava ornata* and *S. purpurea sanguinea*.—The former already described, and the latter distinguished by the red colour of its pitchers, were also honoured with similar awards.

Messrs. Laing & Co., Forest Hill, exhibited numerous plants and obtained certificates for two. *Calceolaria Stanfieldiana*.—A seedling form with very large but symmetrical yellow flowers marked with rich crimson. The strain, of which this was shown as a sample, is an excellent one both in habit and floriferousness. *Begonia Mrs. Laing*.—A Tuberosus *Begonia* with large pure white flowers of excellent form and freely produced. It is an admirable variety, and is not surpassed by any other white form in cultivation. Messrs. Turner & Son of Slough obtained the same honour for *Pelargonium Mrs. Henry* (one of the most distinct and beautiful tricolor varieties ever exhibited). The leaves are roundish in outline, very neat, the centre being green margined with maroon, crimson, and yellow. The habit is good, and the plant is a very beautiful addition to this section of *Pelargoniums*. H. Little, Esq., Hillington Place, Uxbridge (gardener, Mr. Wiggins), obtained certificates for three early-flowering or "decorative" *Pelargoniums* named Criterion, Miss Mary Gill, and Reamie, all good distinct varieties, variously coloured with crimson and scarlet; the flowers of excellent form, and the trusses large.

In addition to the plants especially recognised by the Judges there were many others nearly as attractive, especially in the groups from Messrs. Henderson and Williams, but these we cannot now particularise.

PRIMROSES AND POLYANTHUSES.

In addressing myself, in the first instance, to Mr. Welley Dod as a brother Primrose gardener, I thought that he might be able to make a good observation or two while engaged in the cultivation of this family, so as to throw a little light upon an obscure and long-contested subject.

A good deal might be done without having resort to the jealous precautions of pure scientific experiment. This would entail locks and keys, maiden soil baked or roasted to destroy alien seed, the continual watchful presence of the experimenter, and the employment of the principle of isolation in every stage of the investigation.

No man should, for instance, anticipate an accurate result from sowing a packet of Primrose, Cowslip, or Polyanthus seed bought at a shop, that is furnished to him upon the faith of another, and is secondary evidence to begin with; but he may ensure a fair amount of accuracy by a well-directed use of his own materials. The principle of isolation will of course be partially necessary; the plant from which the seed is taken should have been grown in some locality, cold frame for instance, or greenhouse, in which no other member of the genus is present. The seed should be sown in pots carefully marked both by labels and on the pot itself. "Somebody" as a matter of course will always shift labels about in all directions. Your men, you will find, are of opinion that "Nobody" has done it. Nevertheless it is done to the continual disfigurement of the master and should be guarded against. The pots of seed should be placed in the greenhouse, there to remain the whole of the present season and through the winter. Prick off the plants when large enough into other pots or pans; harden and plant out in spring.

system the second will be to grow Cowslip (pure) and Primrose (pure) in close conjunction, sowing finally the seed of each separately, manual artificial crossing to be used or not. Polyanthus (florists' sorts) and Cowslip (proper) to be treated likewise.

Primroses and Polyanthus not to be grown together with cowslips, as the two former cross each other readily, and would vitiate the experiment as regards the Cowslip. By Polyanthus here understand the brown and golden plant of the florist. Talked forms of the garden Primrose were also called "the Polyanthous Primrose" by the earlier gardeners.

Very early ripened seed will, under the treatment described, produce plants that will flower next spring. I have even brought them into flower in the autumn of the year in which the seed was sown.

I may be deceived, but I do not think that plants raised with the simple precaution I have named will either, being Cowslips, turn into Primroses, or, being Primroses, turn into Cowslips or anything else.—R. TREVOR CLARKE.

(To be continued.)

THE READING NURSERIES IN MAY.

THE care and judgment exercised by Messrs. Sutton & Sons in the selection and improvement of the various strains of seed identified with their name is well known, but perhaps it could scarcely be better exemplified than by the beautiful Calceolarias now forming such an attractive display in the nurseries at Reading. This firm have for some time given great attention to the improvement of those useful decorative plants, and the results are seen in the diversity of colours and excellence of habit that have been attained. One house is entirely filled, containing some hundreds of plants, representing an immense number of varieties, with superior flowers in various shades and markings. A compact robust habit has been obtained that characterises the majority of the plants, the chief exception being the beautiful but somewhat delicate forms with netted flowers which have a slight tendency to depart from the typical habit. By judicious crossings, however, this is being gradually corrected. The flowers are generally of great size and substance, as even and regular in form as can be desired, and borne in huge trusses sufficiently above the foliage to show them to the best advantage. The colours are most diversified. There are self-coloured flowers of rich crimson, orange, and yellow shades; one variety of the latter with enormous blooms of a clear bright, almost a primrose tint, is exceptionally fine. Then there are forms with a ground colour of yellow or orange dotted and blotched with maroon, chocolate, crimson, scarlet, and similar tints; perhaps the most distinct of all being those in which the overlying colour is disposed in a network of veins on the surface of the corolla.

Another important feature in these nurseries at the present time are the Gloxinias, which are equally as well represented as the Calceolarias, and indicate the best of cultural attention in their vigorous growth. None of the varieties are named, as the object is to obtain a strain of seed that shall possess all the good qualities of the Gloxinia, and that a very large share of success has been attained is evident to all visitors. Some of the flowers are of enormous size, but not so large as to become coarse, for they are extremely symmetrical and of good substance. They are both drooping and erect, but preference is given to the latter, as the rich colours in the tube and the form of the blooms are seen to much better advantage than in the others. Purples and crimsons of all shades are seen in contrast with pure white clearly-defined margins and tubes, the continental forms with dotted corollas being also represented. The plants are grown in pots of various sizes from 6 to 10 inches in diameter; but in the latter size the plants are like great bushes, nearly 3 feet in diameter; the pots are entirely concealed by the luxuriant foliage, and several dozens of flowers are open at one time.

In some of the beds outside Pansies are also making a brilliant display. They are remarkable for the varied colours and good forms of the blooms.—L.

ROSES AT THE ROYAL BOTANIC SOCIETY'S SHOW.

On my way home from the north I arranged to take the Botanic on my way; for one gets so *blase* with shows that it requires something very special to arouse one's enthusiasm or make one take any trouble to see them. I was told some of Mr. Bennett's Roses were to be seen amongst them, and I was

desirous of ascertaining how far they bore out the character given of them, or whether my own impressions concerning them would be justified or not.

The character given of them may be exemplified by that given of Duke of Connaught, probably the finest crimson Rose in any section—"It is impossible to imagine a finer exhibition than this" (Beauty of Stapleford); "a most charming Rose of the highest quality" (Duchess of Connaught); while many, and they by no means unsuccessful, rosarians have hesitated to give this unqualified praise, and have even doubted whether as exhibition Roses they will hold their own with varieties already in cultivation.

Mr. Turner brought his well-known skill as a cultivator to bear on the plants he exhibited, and there can be no doubt that they received full justice at his hands. Their luxuriant foliage bore ample testimony to this, and the group altogether was a very interesting one.

Madame Eugene Verdier.—This is a very pretty Rose, with large shell-like petals of a pleasing shade of rose colour.

Louis Doré (Fontaine).—A very bright and pleasing shade of colour, cherry red shaded with purple. Of good form, and likely to be an attractive and useful flower for the exhibitor.

Gaston Levêque (Levêque).—Bright crimson red. A very fine flower, but unhappily of a shade of colour which we have in abundance. Of the shape of Lord Macaulay.

Harrison Weir (Turner).—Bearing out all that has been anticipated concerning this fine flower. Rich velvety crimson brightened with scarlet; flowers large, stout, and beautifully formed. Strong constitution and fine foliage.

Countess of Falmouth (Bennett).—A cross between President and Souper et Notting. Colour purplish rose, with reflex of petals bright pink. Pleasing in colour.

Beauty of Stapleford (Bennett).—This is said to be a cross between Alba Rosea and Countess of Oxford; but it is difficult to believe that it can have Tea blood in it, as I could not trace an atom of perfume in it, and with a Tea Rose for the mother plant this is very odd. The colour is dull, and on my mentioning this to Mr. H. Turner he said that the Roses were so full and took so long to come out that it got dull before it was expanded. If it does this in the house what are we to expect in the open air?

Duke of Connaught (Bennett).—Seeded from President crossed with Louis Van Houtte. The cross has taken away some of the brightness of the latter flower, but has unquestionably given it a length of bud which that does not possess, and has given it the freeness of flowering so characteristic of the Teas. Every shoot bears a bud at the end.

Hon. Geo. Bancroft (Bennett).—Somewhat dull in colour, and in form like Lord Macaulay, which is one of its parents.

It seems to me that as a general result of these crossings that colour has been lost while freedom of flowering has been gained; and so far my impressions have been confirmed, that while most valuable as decorative flowers, we have yet no evidence that they will prove to be exhibition Roses. In one point I have altered my opinion of them. I did not think they were likely to have size, but this I now see they do sufficiently possess. A few weeks hence we shall know more about them.—D., Deal.

THE WOODS AT WHITSUNTIDE.

Owing to the early period at which the festival of Easter fell this year, the Whitsuntide holidays occurred at a time when the traces of winter's iron rule had scarcely been swept away.

Although a great number of trees in our woods are in full foliage, such as the Birches, yet the Oaks, which generally at this season are in full beauty, are now only just coming into leaf. But the effect of their fresh yellow leaves shining in the bright sunshine is so lovely that one can scarcely wish them to be more advanced. As yet the Ash tree is still wearing its winter garb, and unless we have rain soon will continue to do so for some little time. I think I never knew a drier May than we are having this year. For the last month we have had no rain except a brief shower which lasted only for a few minutes, so that the streams are unusually low.

Since I last wrote to you about the woods I have been hard at work improving them, and I have the advantage of one element which can be made to combine beauty with utility, the value of which cannot be overestimated, and that is water. A running stream affords opportunities for wild landscape gardening of the most beautiful character. There is something

so delightful, so fresh, so constantly varying, in a running stream that one never seems to get tired of it; and there is an additional charm, or so it seems to me, in one which rises in your wood. You see first a few drops rising from the ground and slowly dripping into the ditch, a little further you find another spring which unites its tiny stream to the other; and so they go twisting and turning through the wood, ever being joined by fresh companions, till by the time they rush out of the woods we have quite a little brook. In imagination you follow it till it falls into the sea a few miles away, affording capital fishing as it nears the end of its journey.

It is wonderful how much can be done with a running stream however small. The noble owner of these woods has given an instance of this in his own park, which for beauty and ingenuity I never saw equalled. By damming up the tiny rivulet at some distance from his grounds he has made a most respectable stream, and by a series of weirs and waterfalls has given the exquisite view of falling cascades, which last as far as the eye can reach when viewed from his garden.

It is my object to imitate this, only I think I can improve upon it, as his stream goes through an open park, while the one here goes through tangled undergrowth and forest trees. The first thing to do is to dam up the stream by forming a pond. This is, of course, an expensive affair, and also one requiring much labour and time; but it so happens that the ruined remains of a pond exist, and so it will only be necessary to make the banks sound and put up a hatch, and then I shall have a pond in the very heart of the wood surrounded by Hollies and forest trees, and the banks covered with long reedy grass, while small islands too have been formed, from which noble trees spring—the very place for nests. Surely the wild duck will come there. Then, what an oasis it will be! Rushing over the hatch the water will fall into a bed of Alders, among which it now takes its devious way, and at the end of which it will be necessary to make another weir. Here will be place for Nymphaeas, Aponogeton, Water Iris, and other aquatics, as it is close to the main ride.

By the side of this brook I am making a path, which follows every wind, always avoiding straight lines. Sometimes it mounts a bank which separates the stream which divides and sings a duet for 100 yards or more till it comes to a cleft in the bank, where it again unites, which spot we have christened, mindful of lovely Lynmouth, Waters-meet. I have thrown a few rustic bridges across some of the gorges, and am now trying down the course of this stream to build weirs, so as to have tiny cascades, and places where the Ferns and other grasses and aquatics may grow. I say trying, for hitherto my labours have not been crowned with success. The stream, small as it is, always manages to find a weak place in my walls, and I am afraid I shall have to build two walls and puddle the space between them with clay before I shall make them watertight. The few people who have seen my river walk, if I may dignify it with such a name, are perfectly charmed with it, and if any readers of the Journal wish to see a little good woodland scenery, when staying at any of the pleasant watering places near here, I shall be glad to show it to them.

A more lovely walk now than the path indicated there cannot be imagined. For a portion of the way we traverse a high bank, at the bottom of which wanders the murmuring brook. Overhead the Hollies and Birch trees afford the most grateful shade. Soon we descend from the bank and follow the stream on the same level. Although the water is so scanty and the brook so narrow, small trout may be here and there seen wherever a root or projecting stone makes a tiny waterfall. The Ferns wherever you go are now most luxuriant. Here we are in the very home of the Ferns. There are Ferns to the right of us, Ferns to the left of us, Ferns under our feet, Ferns over our heads, Ferns growing in the water, and Ferns growing even on the bark of the mighty Oaks. You cannot tickle the earth but a Fern will laugh at you and caress you as you pass. Ah! and did you ever see such Mosses as we have here? Mosses of nearly every kind and almost of as many varieties as the Rev. M. J. Berkeley mentions in his "Monograph." What a fresh, what a verdant, what a soft carpet do these afford to the feet, and ever fresher are they by the side of our stream. Every mock, as the rustics call the old roots of trees, is covered with Moss, while from each chink or crevice the Ferns put forth their slender leaves.

Everything we see now is bright and green, and speaks of life and hope. The very water gleams in the sunshine, and gives no end of colours as it splashes down some tiny fall.

The branches of the trees are now of such an emerald green that a painter might despair of mixing so bright a colour. The seeds which form for the most part the grass at our feet also now so fresh that we can scarcely believe that cattle rather starve than eat them. All nature now is so busy but the place where she clothes herself with her most brilliant dress is in the woods.

The wild flowers in our wood are simply wonderful. As ride as stony as it is possible to be, it is carpeted with Wood Hyacinth or Bluebell, which appears to flourish in some Here and there, but very rarely, you meet with a white Wood Hyacinth. I have never known the woods so gay with wild flowers as this year; but, alas! that I should have to say I have never known them so deserted by song birds. It is really quite an event to hear a thrush, and I never knew few cuckoos. It is time something is done to protect song birds. Some people are so ignorant as to all that relates to birds that they shoot them all whenever they have a chance, and will not believe they can do good. Silent woods in the month of May are indeed like the play of Hamlet with the principal part left out, and one of the greatest charms of the country is withdrawn.

The scarcity of ground game is also another remarkable feature. I can remember when it would have been impossible to walk through the woods towards evening without seeing hundreds of rabbits, now you rarely see or hear a single one. This, so far as the enjoyment of a stroll in the woods, is a great deprivation, as nothing affords a prettier sight than a lot of rabbits at play in some open space. But they are so valuable now as an article of food that few are left. Of course I am aware how injurious they are to the crops, but this does not alter the fact that what may be the farmer's gain is a loss to all who love woodland scenery.—WYLD SAVAGE.

NOTES ON VILLA AND SUBURBAN GARDENING.

SOWING SEEDS.—Although the principal part of the work of seed-sowing is now accomplished sowings will still have to be made of such vegetables as Turnips, Lettuces, and saladings, and in some instances of Peas and Beans. During showery weather this may be done as usual, but where the soil is very dry the watering pot will have to be brought into use. If the ground be hard and unworkable water it evenly and freely the evening previously to sowing, and where the soil is light draw the drills and well water them a few hours before putting in the seed; this will be found a better practice than watering after the seeds are sown and the soil levelled, because the moisture enclosed by the dry soil does not evaporate so quickly, neither is the surface so liable to bake. If not already done the late varieties of Savoy and other greens and Broccoli should at once be sown, and it is not too late to sow more of the earlier kinds should there be a scarcity of plants from the first sowing. Prick out into light soil Broccoli, Cauliflowers, Brussels Sprouts, and other greens that have been raised thickly either in boxes, pans, or beds. Place the seedlings 4 inches apart in rows 6 inches asunder, in order to obtain sturdy plants which can be moved easily with a ball of earth attached at planting time.

Celery and Leeks.—If the Celery seed has been sown thinly on a good-sized bed it is a good practice to transfer the plants direct to the trenches. The plants from the thinnings necessarily made where crowded should be pricked out for later plantings. In most instances, however, the seed is sown thickly either in pans or boxes, and the plants pricked out before being spoilt by crowding. A hard surface is selected, and on this a depth of 3 or 4 inches of manure is placed and trodden firmly, covering with a thin layer of fine soil. The seedlings are dibbled in about 4 inches or even more apart each way, and shaded from bright sunshine till established. The plants soon take possession of the manure, and from the fact of being on a hard bottom can easily be moved with squares of soil attached at planting time; this extra trouble is taken in order to prevent the injury to the plants caused by flagging. Leeks if treated throughout precisely in the same manner as Celery will grow to a great size, and when well blanched are really excellent if cooked properly.

GREENHOUSES AND FRAMES.

Cinerarias.—The present is a good time to sow seed of these useful plants. Use either shallow pans or well-drained pots and fine light sandy soil; make this firm and level, water it with a fine-rose pot a short time previously to sowing, distribute the seed evenly, press it in with the bottom of a clean flower pot, and cover very lightly with sand only. Place the pots or pans under a north wall on bricks to keep out the worms, and cover either with a handlight or closely with a square of glass. Dryness or bright sunshine are fatal to the minute seedlings. If the old plants as they become unsightly are placed in a cool and shady position and kept supplied with water for a time numbers of seedlings will spring up around them, which may be pricked off to

succed the earliest sown. A judicious selection, however, of the old plants should be made for seed-bearing, as the common varieties seed most freely, and unless weeded out will be found to predominate next season.

Primula sinensis.—All the strongest of those now in the seed pots should when in rough leaf be potted off singly into thumb pots, and the weakest dibbled into a pan, all if possible being returned into a warm frame till established. The soil should consist of equal parts of turfy loam and peat worked up finely and sand added. Leaf soil is a good substitute for peat. The seedlings are apt to become tall and require to be potted deeply, not, however, beyond the "collar." Exposure of the stem results in the loss of many plants from canker.

Cyclamen persicum.—Seedlings of these should be treated similarly to the Primulas. The corms should be half buried in the soil; keep them growing on in a gentle heat if possible. The old plants may be stood thickly in a light place in the open. Unless the seed is wanted all the seed pots should be picked off, and the soil should not be allowed to become dust-dry.

Salvia.—These are easy of culture and some are well adapted for greenhouses, as they are not injured by an occasional rather low temperature, though far from being hardy. Cuttings strike freely in gentle heat, and the plants should be kept pinched back to form good heads and gradually shifted into the flowering pots, suitable sizes being 9 and 10-inch pots. Any rough rich soil appears to suit them, and during the summer the plants may be plunged in a sunny and open position. The three most useful are *Salvia splendens*, *S. Heeri*, and *S. gesneriflora*, which flower in the order named, and maintain a supply of bright and useful flowers from October till May. *S. splendens* requires heat to flower it properly; it is a very showy plant and easily grown. *S. Heeri* is very floriferous, and *S. gesneriflora* is large and fine. Pinch the young plants back closely to promote a bushy habit. A portion of them may be planted out in June and potted early in October.

WORK FOR THE WEEK.

KITCHEN GARDEN.

THE last sowing of Cauliflowers for late autumn use should now be made. The plants from this sowing if planted on sheltered borders last well up to Christmas, but if frost is severe lift them after the heads are the size of a teacup, and lay them in frames or pits. The last sowing of late Peas should also now be made, though in warm soils and situations sowings may be made during the first fortnight of next month. Attend to earthing-up and staking those more advanced in growth, mulching between the rows, at least along both sides, with littery manure to enable them to withstand drought. Runner Beans may yet be sown; the earliest sown being staked before they are much advanced in growth, employing strong stakes if procurable, and mulch with short stable litter or grass so as to maintain a uniform moisture. Similar remarks apply to French or Dwarf Kidney Beans. Supply early Cauliflowers with liquid manure, and mulch with partially decayed manure. Plant out Cauliflowers, Brussels Sprouts, Savoys, and early or winter heading Broccoli from the early sowing. Spring and late Broccoli as well as the principal stock of green vegetables should be pricked out on a spare border, so as to be strong in readiness for planting after early Peas. Continue to plant out Celery as fast as plants are ready, doing so preferably in single rows, affording a plentiful supply of well-decomposed manure dug-in in a moist state, leaving about 4 inches of soil on the surface. Prick out the plants from the later sowings in rich soil, keeping them shaded until established, and the soil always moist. Sowings of Spinach, Radishes, and Lettuces should be made at fortnightly intervals, avoiding transplanting the latter, thinning early, and supplying water abundantly in dry weather. Turnips also should be sown at similar intervals on a north border. Mustard and Cress will require to be sown not less than once a week, so as to have a supply always on hand. A first sowing of Batavian and Curled Endives may now be made. Onions, Parsnips, Carrots, and other root crops have made very little progress during the dry and cold weather, but should be attended to in thinning. Supply Globe Artichokes with water or liquid manure in dry weather, and do not allow the plants to suffer by drought. To lessen the necessity for water and maintain more uniform moisture in the soil, mulch with about 3 inches thickness of partially decayed manure. Basil, Sweet Marjoram, and summer Savory will do on warm sheltered borders in rows about 15 inches asunder. Capsicums require to be planted at the base of a south aspect in single rows a foot apart, and a similar distance from the wall. Except in the south they require to be grown under glass. For Vegetable Marrows and ridge Cucumbers choose a sheltered situation but fully exposed to sun, the ground being well manured. If hand-lights can be afforded for a short time it will be an advantage. Plant out Tomatoes against walls, and in favourable situations they may be planted in the open in rows, training them with single stems, staking, and not stopping until four or five trusses of fruit have set, when all aftergrowth should be kept well in hand so as to advance the fruit as rapidly as possible and secure its early

maturity. Similar remarks applying to those planted against walls, &c., keeping them well supplied with water in dry weather, and mulched with manure. Well ventilate pits containing late crops of French Beans, keeping them and Carrots also abundantly supplied with water. Strawberries will now, except the late varieties, be sufficiently advanced in fruit to admit of trussing-up the choice or those varieties required for table. The trusses may be supported by forked sticks thrust into the ground so as to fit the footstalk of the truss just below the fruit, or sticks about 18 inches long firmly placed in the ground at intervals round the plants, about four to each; and round the top, or at such height as may be necessary, run twine, winding the strand once round each stick and gathering-up the trusses with one hand, so that when completed the fruit is suspended over the twine; then if large fruit be required the imperfect and small fruits should be removed.

FRUIT HOUSES.

Pines.—Well-managed Pine plants as a rule yield the finest fruits when they show their fruit ten to twelve months from the time the suckers are first potted, the suckers at the time being strong and robust; but some allowance must be made for autumn-potted suckers, which have to make a part of their growth under adverse influence. Plants that were finally potted last September will now be showing fruit, and if not means should be adopted to effect it. Plants of that age not exhibiting signs of fruiting should be subjected to comparative rest for a period of four to six weeks, lowering the heat at the roots to 75°, and admitting air fully at 75° to 80°, and let the temperature fall to 75° before closing the house for the day. Very little artificial heat will be necessary, but it must be afforded if necessary to prevent the night temperature from falling below 60°. The plants must not be allowed to become excessively dry at the roots, but whenever a plant needs it afford water liberally. The smaller suckers of the plants referred to potted this spring should be kept growing on until the pots are well filled with roots, when, if it be necessary, the plants can be subjected to the same course of treatment as advised for the larger plants, and these will afford a successional supply of fruit. Continue the treatment as detailed in former calendars to fruiting plants.

Cherry House.—The whole crop being ripe the chief object will in most instances be to prolong the season of supply, and to preserve the Cherries fresh and plump. Unless the foliage on the trees is thin, or the position of the trellis on which the trees are trained is such as to expose the Cherries to the direct action of the sun, shading is not necessary. Strict attention must be given to ventilation, and to promote the keeping of the fruit an occasional sprinkling of the borders in dry hot weather will be favourable. Although comparative dryness in the atmosphere is essential for the keeping of the fruit there must not be any deficiency of moisture at the roots, so that whenever necessary water the border copiously, and if the trees are weakly supply weak liquid manure. Trees in pots will require daily attention, and as soon as the fruit is gathered recommence syringing the trees, and if there be any aphides fumigate when the foliage is dry. Do not remove trees in pots from the house until the buds are well formed, when they may be removed outdoors, affording a position where they can have the benefit of the full sun, placing them on a bed of ashes, and surrounding the pots with the same material to prevent the action of the sun on the pots and render the trees less liable to suffer from inattention to watering.

Peaches and Nectarines.—There must not be any deficiency of water at the roots, or the trees will soon show the effects in stunted growth. Inside borders when the trees are in full growth will require thorough supplies not less than once a week, providing the drainage be efficient, and high outside borders will require copious supplies in dry weather. If the roots are entirely in outside borders and somewhat restricted, as much water will be needed in dry weather as would be required for inside borders, weak liquid manure being afforded to weakly trees, and a mulching of decayed manure 3 inches thick will be beneficial. Syringing must be continued morning and afternoon to prevent red spider from attacking and spreading on the foliage, ventilating early, and closing rather early in the afternoon, so as to lessen the necessity for fire heat; but avoid at all times a close moist atmosphere. Peaches in all their stages succeed best when the conditions are such as to promote steady progressive growth. Continue former instructions in tying and regulating the growth, and thinning the fruit in succession houses, avoiding the two greatest evils of cultivating fruit under glass—viz., overcrowding the foliage and overcropping. Upon the first appearance of insects promptly apply an insecticide before they extend to the whole of the trees.

Figs.—Fruit ripening must have plenty of air and warmth, or they will be comparatively poor in flavour. To ensure a free circulation of dry warm air the temperature must be kept at 65° to 70° at night, and 5° more by day in dull weather, and 80° to 90° from sun heat. When the fruit is all gathered from the pot plants another mulching of well-rotted manure should be given, and liquid manure afforded liberally, which will encourage root-action and assist the trees to perfect their second crop. To subdue any red spider that may have gained a footing on the foliage during the ripening of the first crop syringing must be attended

to twice daily. The leaves should have an insecticide applied to their under surfaces with a soft brush if they are much infested with red spider. Attend to stopping, thinning, and regulating the shoots of trees permanently planted out, and syringe daily until the fruit begins to ripen. Keep the borders well mulched with decomposed manure to encourage a vigorous growth of the surface roots. The young Fig trees struck from cuttings will soon require shifting into the fruiting pots, 12-inch pots are sufficiently large. The pots must be well drained to allow the water, which must be applied copiously, to pass away freely. Pot firmly, and employ turfy loam, with about a sixth of old lime or brick rubbish incorporated.

FLOWER GARDEN.

The earliest Asters, Stocks, Zinnias, Phlox Drummondii, and other half-hardy annuals will now be fit to transplant, and if possible select a dull day for the operation, affording them good rich deep soil and an open situation. Roses are not growing well, and are much infested with aphides and the leaf-rolling caterpillars. Wash them well with tobacco water, eight gallons of water to one gallon of tobacco juice, adding 2 ozs. soft soap to every gallon. Climbing Roses must be attended to frequently, training and regulating the growths; also Clematises, Aristolochias, Virginian Creepers, and climbing plants generally. Herbaceous plants must be kept free from weeds, and any that require support must have neat stakes, and the growths secured to them before they become twisted about by wind. Hardy annuals should be thinned to allow of their attaining due development. Vacant spaces in borders may be filled up with bedding plants, or by sowing Mignonette, Candytuft, and other showy annuals, also Asters, Stocks, &c. Spring-flowering plants should be propagated so soon as they are out of flower; such as Alysaums, Arabises, Aubrietias, Daisies, double Primroses, Polyanthus, dwarf Phloxes, Gentians, and Auriculas increase best by division, planting them on a north border in rows 9 inches apart, and 4 to 6 inches asunder in the rows. Iberises and double Wallflowers are increased by cuttings inserted in a shady place and covered with handglasses. Box edgings may now be trimmed, choosing a moist time for the purpose, for if done in bright weather they will have a scorched appearance. Rhododendrons, Azaleas, Ledums, Brooms, Lilacs, Laburnums, and other flowering shrubs will be in or coming into bloom, and to make them enjoyable preserve the neatest order, attending regularly to mowing, sweeping, weeding, and rolling lawns and walks.

TRADE CATALOGUES RECEIVED.

B. S. Williams, Victoria and Paradise Nurseries, Holloway, London, N.—*Catalogue of New Plants*.
James Dickson & Sons, "Newton" Nurseries, Chester.—*Catalogue of Bedding and Border Plants*.
J. Linden, Gand, Belgium.—*General Catalogue of Plants*.

TO CORRESPONDENTS.

* * All correspondence should be directed either to "The Editors" or to "The Publisher." Letters addressed to Mr. Johnson or Dr. Hogg often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense. Correspondents should not mix up on the same sheet questions relating to Gardening and those on Poultry and Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

BOOKS (Mrs. Treherne).—We do not know of any book of the kind you appear to require.

PARAFFIN STOVE (E. Clifton).—Your letter has been handed to the maker of the stove, who will communicate with you on the subject.

ADDRESSES (S. C. J.).—Write to Mr. Cannell, The Nurseries, Swanley, Kent. (Orewfordian).—The address you require is Mr. Howard, The Nurseries, Southgate, London, N.

MYOSOTIS WEIRLIGH SURPRISE (R.).—This pretty striped variety was raised by Mr. Harrison Weir, and first sold by Messrs. James Carter & Co., 287, High Holborn, London.

ERRATUM.—By a printer's error our correspondent "A. C." was made to say, on page 401, that the National Rose Society had secured the very worst day for their Show; it ought to have been the very best day—July 3rd.

VITICULTURAL MEDAL (Salopian).—We are unable to answer your questions. Mr. Moore, The Botanic Gardens, Chelsea, London, S.W., is the Secretary to the Trustees, and will doubtless supply you with the information you require in reply to a letter addressed to him on the subject.

STRAWBERRIES NOT SWELLING (E. D.).—We cannot account for the circumstance; indeed, you afford us no data for forming an opinion, neither mentioning the variety, state of the plants, nor the conditions under which they are grown.

SCALE ON CAMPELLIAS (J. E.).—Your plants are attacked by the white scale, which if allowed to increase will injure them considerably. Dissolve 3 or 4 ozs. of soft soap in a gallon of water and with this sponge the leaves, especially on the under surfaces where the insects most abound.

CATERPILLARS ON GOOSEBERRY BUSHES (Jana).—Syringe them then dust every portion of them with white hellebore powder, and turning up the branches so that the powder can be applied to the under surfaces of the leaves.

DISSOLVING BONES (G. O. S.).—If you refer to pages 381 and 382 of the 18th inst. you will find the information you require. The phuric acid is not diluted, and we think it an unsafe experiment to mix with the bones in a cask, as the acid would greatly injure if not destroy wood.

CALCEOLARIAS (Canon Babington).—If the flowers were sent in a tin resembling a mustard tin it arrived empty, and was stamped by the office authorities, "Found in E.C. without contents." We cannot see the post-office stamp, but it has some resemblance to London, and we presume therefore it is the parcel that you posted.

BOUVARDIAS (Subscriber).—The long shoots should be stopped now, the plants be placed in a very light position to induce sturdy growth, grow them in cold frames during the summer, often removing the light and pinch the shoots as needed until August. But little pinching is now when the plants are fully exposed to the sun and air.

CHRYSANTHEMUM FRUTESCENS (Idem).—Cuttings inserted now in a soil and kept in a close and rather warm frame until rooted will, with cultivation, make good plants for flowering next winter. The old plants may be slightly pruned now, planted out, and potted in the autumn, they will afford a large supply of flowers throughout the winter.

ASPARAGUS NOT THRIVING (Wireworm).—If wireworms are the cause, as you suggest, of the plants not succeeding, you might meet great number by sowing a little Carrot seed in the beds and drawing Carrots as they become attacked. Pieces of Turnip, Carrot, and Pot inserted in the bed will attract many of the grubs, and if these be examined frequently you will soon reduce the numbers of the pest.

SORREL (A. Boers).—The kind you have is probably the French Roman Sorrel, Rumex scutatus. If you want a smaller form grow ordinary garden Sorrel, R. acetosa. A house suitable for growing this will also grow Pines, assuming there is sufficient height for the plants that you can command a bottom heat of 90°. Either the Smooth-leaved Cayenne or Queens will suit you. We should have a few plants of both.

PECULIAR WALLFLOWER (W. Roberts).—The Wallflower you sent us of the many examples of abnormal growth we have received this year. In this case it appears that the petals have not been fully developed, and the colour has passed into the sepals, which are of the usual form. The cause of such freaks it is very difficult to discover, and we can only surmise that they are in some measure due to the effects of the past severe season. It would not be worth engraving.

CROPPING VINES (P. S.).—Without knowing the number of Vines or the length of the rods it is impossible for anyone to answer your question. A pound of Grapes to each lineal foot of rod is a good average crop. In strong Vines will carry more, while those that are weak should be kept quite so heavily. If your house is span-roofed the number of bunches cannot be too heavy, but if a lean-to the crop is a heavy one. You may, however, easily determine the question for yourself according to the data above given.

BREDLING PANBY (J. Ward).—Your seedling is a very good one, the flowers being almost circular, with stout overlapping petals of a deep pink colour suffused with violet and a creamy white eye. You can only secure it if it is distinct from and superior to others in commerce by submitting it to an experienced grower of these flowers, and as you have been engaged in crossing Pansies for a number of years you will be able to form it to a competent florist.

STOVE FOR HEATING (W. S. Shadwell).—As we have not had experience with all the stoves and lamps that are advertised from time to time in our columns it is obviously impossible for us to say which is the best; but, as we have often stated, it is contrary to our rule to recommend the article of any particular vendor. The best plan is to obtain the addresses from the vendors of stoves of those who have used them, and write for information respecting their efficiency.

DESTROYING THE MOLE CRICKET (Woodham).—This extremely troublesome insect can only be effectually destroyed by searching for the nests in the approaching month when the female lays her eggs, which should be dug up and disposed of in the most convenient manner. The eggs are most deposited in hollow places about 6 inches from the surface of the ground, and sometimes as many as three hundred of the small granular yellowish eggs are found in one nest. The insect is known to entomologists as Gryllotalpa vulgaris, or Gryllus gryllotalpa.

ROUGH GRASS IN LAWN (M. A. S.).—Either the lawn seed employed was of inferior quality, or some seed of the coarse grasses was in the soil previously to sowing it. Your only remedy is to dig up the strong and unsightly tufts and sow in their places fine lawn grass seeds and white Clover. In preparing lawns it is of the utmost importance to obtain the proper and carefully mixed seed from those who are competent and careful to make a right selection. We know of nothing more costly in the end than cheap lawn seeds.

SHOW AND FANCY PELARGONIUMS (Inquirer).—The following are good varieties:—*Stones*: Artist, Cornish, Highland Lassie, Prince Leopold, Wren in White, and Ruth. *Fancies*: Acme, Ellen Beck, East Lynne, Undine, Lee Page, and Princess. The following, known as decorative show Pelargoniums, are very floriferous and valuable for producing an early display:—Duchess of Bedford, Duchess of Edinburgh, Triumph de St. Mandé, Jeanne Brade, T. A. Dixon, and Challenger. Some Zonal Pelargoniums produce larger trusses than others. Healthy young plants well grown and stopped beyond the trusses produce heads of a maximum size.

DEUTZIA AFTER FLOWERING (Idem).—The plants should be slightly pruned, cutting them back to where healthy growths are proceeding, and be grown in a very light house for a time, then placed out of doors; or they may be planted out now and potted in the autumn.

JASMINE SAMBAC (Forthshire).—The plant should have a light position in a stove, and be encouraged to grow freely. It must not be overpotted, and when the pot is filled with roots requires copious supplies of water; on this account efficient drainage must be afforded. The compost should consist of rather light turfy loam with a fourth part of leaf soil or much-decayed manure added, and a little sand and charcoal, potting rather firmly. It is when the roots are active and crowded in the pot that much water is needed, until then it must be applied with care. You do not state the cause.

tion of your plant, whether it grows luxuriantly or the reverse; perhaps it is too much crowded or shaded.

STOPPING VERBENAS (*Idem*).—If the plants are growing freely, not otherwise, the tops may be pinched out; but this should be done soon enough to permit fresh growth being made before the plants are put out, as one check at a time is sufficient, and they always experience a check more or less when turned out of the pots and planted in the beds. It is very important that the plants are kept free from insects, and it is a good plan to dip them in a solution of soft soap before planting.

DISBUDDING VINES ON WALLS (*P. J.*).—The laterals should be so disposed that the leaves of one do not overlap those of the other. As a rule the distance between the laterals on both sides of the main rod should be from 16 to 18 inches, according to the size of the foliage. Some varieties have smaller leaves than others, and all Vines are not similarly vigorous; the distances named are therefore only approximate. The real point is to have all the leaves exposed to the full action of light and air.

SUMMER-PINCHING FRUIT TREES (*Idem*).—It is seldom necessary to commence pinching the growths of fruit trees immediately three leaves have formed and to continue the practice throughout the summer. No rule can be framed to meet all cases. The condition of the trees and the objects of each cultivator must always in a great measure determine the mode of pinching. A safe rule will be to let six leaves form and then to pinch, leaving four of them. This rule may be applied to all healthy trees except Peaches and Nectarines, but if a few more leaves form before pinching and one or two more are left no harm will be done; indeed, if any trees are weakly a little extra growth will be beneficial. The leading growths may extend until August, when they too may be shortened if necessary for maintaining the symmetry of the trees, but not of course so closely as the side growths. This subject will be referred to in our "Work for the Week" column.

WINTERING SPIRÆAS (*G. L. N.*).—We presume you mean *Hortia japonica*, which is commonly called Spiræa, and has white plume-like inflorescences. When it has ceased flowering plant it in your garden, and if you place a few leaves or ashes over the crown it will pass the winter safely; it is, indeed, quite hardy in most districts. The fancy *Pelargonium* after flowering should be placed out of doors, and in July be cut down, and when it has made growth half an inch long most of the old soil should be shaken from the roots and fresh compost given. If you have not a frame to put it in it may remain outdoors until the heavy rains of autumn occur, when it must be placed in a light window of your dwelling, be watered carefully, and kept free from insects.

PROPAGATING PYRUS (CYDONIA) JAPONICA (*Idem*).—It is increased by layers pegged firmly in the soil in September, to remain there for a year or more before they are severed from the plant. Cuttings of the roots inserted at the same time in a shady border will also produce good plants.

ORIGANUM SIPHYLEUM (*C. P.*).—This is the name of your plant that is known in some districts by the popular name of the Hop Plant. It is of easy culture, requiring ordinary loamy soil. It is a native of the Levant and is only hardy in sheltered places in the south of England, and is generally best wintered in a frame, greenhouse, or window of a dwelling. Being of a stubby habit it does not die down; the parts bearing the inflorescence of course die and should be cut off to where the growth is healthy. It may be planted out or plunged in the garden during the summer, and taken in on the approach of cold weather in the autumn. It is one of the Marjorams, most of which are more or less fragrant, hence some of the species are used as culinary herbs.

STRAWBERRIES FOR FORCING (*Puddle*).—Peg the runners as early as possible either in 2-inch pots, to be afterwards shifted into pots 5 or 6 inches in diameter, or affix them at once in their fruiting pots. Both plans are equally good according to the manner in which they are carried out. The soil should consist of two-thirds or a little more of rather strong turfy loam and the remainder of decayed manure, and if a little bone dust can be added—about a quarter of a peck to a bushel of soil—it will be advantageous. Drain the pots carefully so as to prevent the ingress of worms, and protect the drainage with a little flaky manure, over which sprinkle a little soil. Make the soil very firm, but do not quite fill the pot, as room must be left for holding sufficient water to penetrate the entire mass of soil. Water carefully yet sufficiently. When the young plants are well rooted sever them from the parents and place them on a firm base in an open position. Do not permit them to crowd each other, and water them abundantly as they attain strength. During hot weather they need watering twice a day. By this treatment you will have bold crowns that are sure to be fruitful. In the autumn plunge the pots in ashes, and let them remain until you place them in your house. The time for doing this depends entirely on the time that the fruit is required; the end of January or early in February would perhaps in your case be suitable. Useful forcing varieties are *Vicomtesse d'Harcourt* de Thury, *Keens' Seedling*, and *President*, but many others are also good for the purpose. The ambiguous remark which you quote about *Oactuses* refers to drying the wounds until a callus forms before inserting the cuttings.

INSECTS (*A Regular Subscriber*).—The subject is being investigated. In the meantime you cannot do better than adopt our advice given in previous issues. All the letters we have received have been answered.

NAMES OF PLANTS (*No Name*).—1, *Salaginella sulcata*; 2, *Phlebodium* (*Goniophlebium*) *aureum*; 3, *Salaginella Martensii*, var.; 4, *S. caulescens*; 5, *Davallia Mooreana*; 6, *D. caucasiensis*. (*J. S.*)—1, *Ajuga reptans*; 2, *Draconopetalum grandiflorum*, a much-neglected alpine plant. (*Flora*).—*Veronica gentianoides*. (*P. L. P.*)—1, *Lonicera tatarica*; 2, *Diplacus glutinosus*. (*Mrs. Edwards*).—The Rose, having been posted on Saturday without any packing to keep it fresh, was totally unrecognisable after being in the post office throughout Sunday. Many flowers that we receive on Mondays are shrivelled by the same cause. (*M. H. E.*)—1, *Viburnum Lantana*; 2, *Sorbus campanulata*; 3, *Quercus Corria*; 4, *Rhamnus cathartica*. (*G. D.*)—The Rose dropped its petals immediately it was removed from the box, and the variety was consequently quite unrecognisable. We might possibly identify a fresh young specimen, but we do not undertake to name varieties of Roses and other florists' flowers, which can only be satisfactorily done by comparing them with others in a large collection. (*Seventeen-years Subscriber*).—No. 1 is certainly not a Cowslip, and the flowers are too shrivelled for us to determine whether it is a true Oxlip. No. 2 is a *Verbascum*, but we cannot determine the species. (*A Subscriber*).—1, *Leucocjum vernum*; 2, *Asperula odorata*. (*David Landborough*).—The leaf was much shrivelled,

but resembles that of *Rubus australis*. The *Rhododendron* flower was too withered to be recognisable. (*J. R. E.*)—*Diplacus glutinosus*.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

THE COMPARATIVE VALUE OF FEEDING STUFFS.

THIS is a subject well worthy of the attention and consideration of the home farmer, for we have often heard the most vague and divergent ideas expressed in regard to it, even amongst agriculturists, whose intelligence and experience would frequently attract our attention upon various matters in practical farming. Few farmers in the present day would now say seriously they entertained the opinion that sheep or bullocks could be fed to greater advantage on hay and turnips alone, or roots of any kind, than by employing some other dry and nutritious kind of food in addition to those substances. We, however, some forty years ago used to pride ourselves upon this mode of feeding, and at that time we made excellent stock, especially of sheep and lambs, without using anything but hay and roots. We, however, like most other farmers, have been carried away by the influence of fashions in farming and the great desire to shorten the feeding period of fattening stock, and the idea of early maturity has induced us, without further argument, to give strict attention to the use of feeding stuffs and their comparative advantages.

In referring to the substances offered as feeding stuffs in the market linseed cake justly stands at the head of the list, and if good and genuine will contain about 11 per cent. of oil, although the greater part has been extracted from the seed; 28 per cent. albuminous or flesh-forming matter; 80 per cent. of non-nitrogenous matters, such as starch, sugar, and mucilage; 12 per cent. of woody fibre; and 5 per cent. of mineral matters. This cake must therefore be a very nutritive article, for it contains, as above stated, all the elements for successful feeding. Linseed cakes are made from seed grown in different localities, all of which, however, possess the same qualities almost equally, provided they are free from dirt and other impurities. The chief objection to linseed cake is its high price, which is governed, not only by the demand and the supply, but also by the price of the oil. When the oil sells freely and is in great demand it stimulates the manufacture, but when the market is slow it tends to increase the cost of the cake. Linseed cakes are frequently at the present time very much adulterated, sometimes with bran, which, although perfectly harmless and of little value as a feeding ingredient, diminishes the value of the cake. At other times starchy matters, such as rice dust or damaged grain, are sometimes met with.

Rape cake, although formerly used generally for the purposes of manure, is now extensively used as a feeding stuff. It does not differ very widely in general composition from the linseed cake. The composition is as follows:—Oil, 11½ per cent.; albumen, 80½; starch, &c., 28; and 8 of mineral substances. Thus it contains a higher percentage of albuminous or flesh-forming matters than linseed cake. It has, however, a certain bitter taste which somewhat lowers its value for feeding purposes. The chief objection to rape cake is its liability to contain oil of mustard, the presence of which can be easily detected by mixing a little with water, and subjecting it to heat, when the smell of the mustard is very easily recognised. Foreign rape cake is the best, inasmuch as it is made from seed grown in the north of Germany and France, and is purer than the East Indian seed, from which English cake is principally manufactured. As its cost is about two-thirds that of linseed cake, and its residue as manure rather greater, it is therefore most valuable for the feeding of young growing stock.

Decorticated cotton cake is a valuable feeding substance. It is almost exclusively prepared in the southern States of America, where the thick husk can be profitably stripped off. The taste and smell of this cake are peculiar, and less pleasant than linseed cake; but it contains as much as 41 per cent. of flesh-forming

elements and 16 per cent. of oil, as well as a considerable proportion of phosphates, and must therefore be regarded as a valuable food, although the quantity of starchy matter is rather lower when compared with other cakes. In using this cake, and taking into consideration the taste and smell of the article, any objection of this kind will be reduced greatly by using the cake in the meal state, so that it may be mixed with cut roots as well as in connection with bean or barley meal, in which manner of feeding the cattle never object to it. The manuring value of decorticated cotton cake, however, is fully equivalent to the high amount of nitrogen and phosphates it contains. Ordinary samples contain of starch, sugar, &c., about 81 per cent.; albumen, 23.7; oil, 6.2; mineral matters, 6.5 per cent.

Common or undecorticated cotton cake contains rather a large amount of husk, and if given in very large quantities is rather hazardous on account of injury which may happen to the stock when fed upon an undue proportion of that substance. Notwithstanding, it is a valuable addition to our feeding stuffs if used with care—that is to say, with a larger quantity of roots and less hay or straw chaff.

Decorticated earth nut cake is a sweet palatable article, extremely rich in flesh-forming constituents, containing as much as 40 per cent., consequently its manuring value is high. It is produced from a nut found in Africa, and after the extraction of the greater proportion of its oil it then leaves about 7 per cent. in the cake.

Palm nut cake is a useful feeding material, particularly for pigs. It sometimes contains as much as 18 per cent. of oil, but the proportion is rather variable. Its flesh-forming elements are rather deficient. There are various other cakes that are used in feeding, but as most of them have only a passing interest attached to them and are not extensively used we will only mention them by name—poppy cake, camelina, sesame, hemp, coconut cake, &c.

It is frequently an undecided question with farmers which is the cheapest and most profitable food to employ—corn or cake, and sometimes when the former is low in price the latter is discarded altogether. Now this is not right, for the home farmer should remember that linseed has medicinal as well as feeding qualities; and we have always found in our own practice that sheep or bullocks are never so healthy and never winter so well as when they are supplied with proper proportions of linseed cake. It will be by no means sufficient in estimating the relative value in cake and corn merely to ascertain the cost per ton.

We will now refer to the analysis of beans, which is the next most concentrated form of cattle food, and compare it with that of linseed cake, and we find that instead of having 12 per cent. of oil it has only 2; 24 of albuminous compounds, 46 of starch, &c., and 8 of mineral matters. Now, since oil is estimated at more than double the value of the other carbonaceous matters, such as starch, gum, and sugar, and, again, beans containing considerably less of the flesh-forming elements than cake, it follows that the latter must be a very superior article to the former, and with beans we also include peas and lentils, both being very similar in composition to beans.

(To be continued.)

WORK ON THE HOME FARM.

Horse Labour.—Having proceeded during the past month with little or no interruption, the land is now generally in forward condition for sowing with Swedish turnip and the early varieties of common turnip seed. The first week in June is the best time for sowing Swede seed in all the forward districts, but earlier in the northern counties and in Scotland. The weather has been so dry lately that the mangold seed will scarcely vegetate unless we have rain soon, and unless the land has been kept worked down fine during the following period. This circumstance ought to teach the home farmer that unless he tills the land for Swedes so as to retain the moisture, that the Swede seed will not vegetate, in which case the land will soon be covered with small weeds, and either ruin the prospect for a crop of roots, or cost more than they are worth for hoeing if drilled on the flat; and hence the propriety of drilling or dibbling all root crops on the ridge, or stretch, on all dry soils, because then the horse hoe can be worked between the stretches, and the weeds destroyed whilst they are young. The two great points to be observed in making root culture successful is to keep the soil fine and moist before seeding, and also to stretch the land in order that horse-hoeing may be done at all times without injury to the young plants. There is to all appearance the probability of a dry summer; and the advantage of keeping land under tillage always fine, is that a very little rain will cause the seed to germinate; on the other hand, if the land is rough and dry the seeds seldom start freely, and much rain is needed to bring forward the young plants. There is still time to sow mangold as a second crop after rye, trifolium, vetches, &c.; and if the seed is sown, and the land ploughed and worked fine the same day, there is more chance of the seed germinating than when sown in land which has been under fallow. In fact the home farmer should be always prepared by his management for root crops for a dry summer, and this will always succeed whether the season proves wet or dry. There is, however, the circumstance of

land being exceedingly foul with couch and wash, in of clearing it away the land must become very dry, following process. When the land is very dry, circumstances we advise delay in sowing, so that in a timely rains succeeding, the seed may be sown directly, although the season may be far advanced, the young start fair with the weeds, and sometimes when the seed has been delayed very much we sow hybrid turnips instead or otherwise at hoeing time leave the plants clear. The potatoes are now coming up well and should be immediately the lines can be discerned, and the handle as soon as the plants are strong enough to bear the hoe injury to the plants.

Hand Labour.—The cutting-up green fodder for the cattle in the boxes will now employ a man and odd in their time; also the cutting of border grass round the flat be continued daily, as it keeps down and prevents seedling, and furnishes useful food for cattle, pigs, &c. of potatoes will now be going on, especially in those where the sets were planted on the stretch. The earliest of the too, where the seed was hand-dibbled either on the flat or the flat, may be hoed now, as the hoes can work between the trenches of dibbled seed much earlier than when drilled. All sorts of corn as well as the meadows should now be by the women. This circumstance shows how essential services of women for all light field work, for in much will do more, and more effectively than the men. machine for pulling weeds will apply chiefly to those as charlock, and those which show above the corn, but grass for hay and the meadows the machine will be of no use.

The dairy cows as well as the young store cattle will out in the pastures and parklands, and by grazing obtain their own living. In those cases, however, should the grass short in consequence of dry weather continuing, a bait fodder, such as trifolium, vetches, rape, &c., may be given at milking time for the cows, and cake may be given in the to the young cattle in order to maintain them in a good condition, and for the improvement of the pastures likewise weaning calves may now run in a dry paddock with shed for them to lie under at night or in bad weather. They should continue to get their food as calves, there being a better or cheaper than T. Bowick & Co.'s lactine food in accordance with their directions. The yearling-off heifers receive cake in the pastures unless the grass is of sufficient to fatten a bullock. Those heifers intended for breeding not have the bull turned in with them until the month of May as they will then bring their calves at the best time, the 1st of May. The fat sheep will by this time have been sold, but the stores, whether of tegs or breeding ewes, should next be shorn, about the middle of June being the best time, if the weather continues very cold, especially with frost at the like we had on the 20th of June, 1874, the stock should be into a dry sheltered paddock for the night, and at any rate land situated above the fog level. The horned Dorset and Shropshire ewes will now have offered to the ram in many cases, at those ewes intended for producing early lambs for the market. The stock flocks will have the rams turned in with early in June; the lambs will then come in November and December, which is soon enough for the stock flocks. The ewes to produce their lambs fit for sale at Easter should now have the rams turned in with them, for the Dorset downs will be earlier than Hampshire downs.

THE TURNIP FLY.

If the farmer will only drill-in a small quantity of peat charcoal along with his turnip and mangold seed he will find that the plant rushes up into the broad leaf so quickly that the crop is secure. If the drought becomes exceptionally severe a sowing of this charcoal on the little plant will also save it from being eaten up. I have seen the effects of it during the past three years and think that your readers should know of it. The material is prepared at the Cowle Works near Doncaster.—A. W. E.

CANKER IN PIGEONS.

SEVERAL correspondents have applied to us for advice as to the treatment of young Pigeons suffering from "canker." The disease is a mysterious one, and as far as our experience goes, almost an incurable one in the case of young birds. In our lofts we are often sure from the appearance of squeakers that the disease has begun internally before its visible signs appear in the throat and mouth. The little creatures become thin and their feathers rough, and often their parents for no apparent reason neglect to feed them. Tonics and stimulants are of no use. The fatal signs are soon seen in the throat and mouth—viz., particles of a white cheese-like substance. These may be scraped away with a blunt knife or a toothpick and caustic applied, but our own experience is that such treatment only inflicts useless torment on the patient. We have known old birds which are, however, seldom attacked by

thus cured, but in the case of young ones it invariably The growth of the fungus-like substance quickly fills and throat and becomes offensive and they die. We find it in almost all cases the result of interbreeding, and to be a form of scrofula. There are ways, however, of its spreading, for it is undoubtedly contagious. The hints may lead to the preservation of valuable birds:—certainly communicated through water, consequently where show any signs of it separate them at once.

We have never known an instance in which after one young pair, fed by the same parents, has suffered from it, the other has been saved. Consequently it is best immediately to kill one of which undoubtedly suffers from canker.

One of birds which have fed squeakers with canker, without having the disease in any apparent form, will almost give it to all the young ones they feed through the milk. Consequently, if it is especially desired to rear the produce of a valuable pair whose former squeakers have died from canker, the eggs should be transferred to a strong pair of birds of some breed, or better still, each egg should be given separately to a pair. The foster-parents having no inclination to the disease, there will be all the more chance for the delicate squeakers to escape from it.—C.

VARIETIES.

IN reviewing the schedule of the Bath and West of England Show, we remarked on the fact that the old rule against divided pens for poultry was erased. We have since been informed by Woodwin that the rule is really repealed, and that birds are sent in properly divided baskets—a great boon to many exhibitors.

THE poultry yards of parts of France have for some years been subject to fearful ravages from diarrhoea. The Minister of Agriculture and Commerce has had the attention of some scientific men called to the question, and has published the result of their investigations. Fancy the Lords of the Privy Council troubling themselves about apparently so trivial a matter. The result of investigation is, that the disease appears to be caused by minute parasites, which pass through the body and are frequently picked up again by healthy birds, hence the rapid spread of the disease. We have long suspected that most of the obscure diseases in which our domestic birds suffer, chiefly when congregated in large numbers, are parasitical. Surely some public-spirited orders, or such a body as the Poultry Club, might have a scientific investigation made of those diseases.

BRITISH BEE-KEEPERS' ASSOCIATION.—The Exhibition of the Association, which is to be held in the Royal Horticultural Society's Gardens at South Kensington in connection with the Society's Flower Show on July 27th to August 2nd, is expected to be a large and interesting one. The schedule of prizes includes many silver and bronze medals, with money awards for hives and bees, supers, and honey and comb foundation. There are also prizes for cottagers, for foreign honey and comb foundation, for beekeepers, for apianarian appliances, bee furniture, bee flora, and diagrams. A honey fair will also form a feature of the Exhibition, and prizes are offered for a driving competition on the first day of the Show. Schedules may be obtained from, and donations for furthering the objects of the Association can be sent to, the Hon. Secretary, Rev. Herbert R. Peel, Abbots Hill, Hemel Hempstead, Herts. An Exhibition will also be held in connection with the Dairy Show at the Agricultural Hall, London, in October next.

AN EARL AS A STOCK-BREEDER.—The Earl of Dunmore, says the "American Cultivator," who owns a property of thirty thousand acres in Scotland, and is celebrated as being one of the most extensive cattle-breeders in the United Kingdom, is on his way to Helena, Montana, where he purposes starting a ranch on a very extensive scale. He intends to buy several thousand head of cattle in Texas, and have them transported to his ranch during the coming summer. It is his further intention to import two or three hundred bulls of his own favourite breed, and he is sanguine of raising a stock of cattle second to none. His ultimate intention is to ship beef to England, preserved by the refrigerating process. There is a wide field for such an enterprise, and with Lord Dunmore's extensive resources he is not unlikely to meet with success.

GAPES IN CHICKENS.—Gapes may be cured by giving a piece of camphor gum, the size of a small pea, every day until the chick seems well. Sometimes two or three liberal doses of pepper will effect a cure. If the chicks are very bad, fumigate with sulphur, and give two or three drops of solution of carbolic acid and water; sixty drops of water to one drop of acid form a solution. Do not hold the chicks directly over the fumes of burning sulphur, and do not fumigate too long, or the remedy may prove worse than the disease. Let the chicks inhale the fumes for two or three minutes, and in most cases that will be sufficient to effect a cure.—(Prairie Farmer.)

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.—The annual meeting of this Society was held on Saturday last in Hanover Square, the President, the Duke of Bedford, occupying

the chair. On the motion of the Duke of Richmond, seconded by Mr. Kimber, Mr. W. Wells of Holmwood, Peterborough, Northamptonshire, was elected President for the year ensuing the Carlisle Show. The report of the Council, which was read by the Secretary (Mr. H. M. Jenkins), stated that the number of members was 7929, showing an increase of thirty-eight since the December meeting. After alluding to the meeting at Carlisle, which is to commence on the 12th of July next, and to the meeting in 1881 at Derby, it issued the country meeting for 1882 would be held in the district which comprised Cornwall, Devonshire, Dorsetshire, Somersetshire, Wiltshire, Hampshire, Berkshire, Surrey, Sussex, and Kent, in accordance with the scheme of rotation which was at present followed. The result of the first year's work in the new laboratory had been highly satisfactory to the Council. Contagious diseases of animals of the farm had not prevailed to any considerable extent during the last year; foot-and-mouth disease had almost ceased to exist in the country; but the Council had remarked with the greatest concern the ravages of the rot in the sheep and cattle. With a view to diffuse the most accurate information on this subject, they requested Professor Simonds to prepare a revised edition of his original treatise on this malady. They had published this report at a nominal charge, and some thousands of copies had been sold. On the motion of Sir J. H. Maxwell, seconded by Mr. J. K. Fowler, the report was adopted. The twenty-four members of the Council retiring by rotation were re-elected with the exception of Mr. W. J. Edmonds, who did not offer himself for re-election, and whose place was filled by Lord Morton. The proceedings concluded with a vote of thanks to the President.

BEE ECCENTRICITIES.

ON Thursday last one of my hives (Abbott's frame) threw off a swarm; after a good deal of hesitation they went back to the hive. I supered them, hoping to prevent swarming. This, however, did not stop them, for on Friday they started off again. I hived them in a skep, and in the evening tried to transfer them to a bar-frame hive, and thought I had succeeded; but to my disgust this morning (Saturday) I found them all outside the hive. They were carefully watched, and about ten of them set off again to the bush on which they swarmed yesterday. My gardener in looking into the frame hive told me he thought he saw the queen. This I could not credit, for surely, I thought, the hive would never have gone off. However, I had scarcely expressed my dissent when there was a rush back again, and as the top of the hive was open they all swarmed into it, and in a few minutes were safely housed. Can Mr. Pettigrew give a solution of this? It rather shook my belief in their intelligence.—D., Deal.

BRITISH BEE-KEEPERS' ASSOCIATION'S REPRESENTATIVES.

WITH reference to your correspondent's report of the last meeting of the Committee of the British Bee-keepers' Association, will you allow me to say that Messrs. Abbott and Carr will visit Ireland this summer on precisely the same footing as Mr. Cheshire will visit the Show of the Royal Agricultural Society at Carlisle—viz., as representatives of the British Bee-keepers' Association. The Irish tour, which was advocated so forcibly at our Annual General Meeting by our President, the Baroness Burdett Coutts, is being arranged by Canon Bagot and other gentlemen in Ireland who have the welfare of the Irish peasantry at heart, and I feel sure that they will receive Mr. Abbott as something more than a mere manipulator, and Mr. Carr as something more than a mere lecturer. Mr. Abbott, the Editor of the "British Bee Journal," is well known in Ireland as well as in England as one of the oldest and best of our southern English bee-keepers, whilst Mr. Carr is no unworthy representative of the bee-masters of our northern counties.—HERBERT R. PEEL, *Abbot's Hill, Hemel Hempstead.*

FURTHER EXPERIMENTS WITH COMB FOUNDATION.

I NOW redeem my promise by giving the results of my experiments, taking those first in order in which I overcome the tendency to sagging in impressed foundation by attaching to the face of it some non-elastic or but slightly elastic fibre.

My plan of fixing foundation with melted wax may be briefly described thus. A piece of board about five-eighths thick and just small enough to pass into the frame has screws to its back two small battens, the ends of which project half an inch or so beyond the board; into these projecting ends screws are put, so that when the board stands upon the table and the frame is put over it the frame rests upon the screw heads. The screws are so adjusted that when the sheet of foundation is placed upon the board its upper edge is just in the centre of the top bar. The board is damped to prevent sticking, and now frame and foundation having taken their places the whole is held in the hand top bar downwards but inclined to the horizon. Melted wax is dropped at the highest point of the junction to be made between

foundation and frame. It runs quickly down the joint setting as it goes and fixing with surprising firmness the sheet in its correct position. The board is brought to the perpendicular, when the frame can be at once removed with its depending waxen sheet. Sheets thus fixed do not need waxing on both sides; indeed it is much better that they should not be, for the line of molten wax conceals the form of the cells and hinders the work of extending the comb at this point. Keeping one side perfectly clear secures an immediate building-out of cell walls on that side, and so prevents the falling of combs of which complaints are sometimes heard. A friend of mine once inquired if the fixing were really strong enough, referring to a Stewarton I had thus supplied throughout with wax sheet. My answer consisted in lifting and carrying the Stewarton by the foundation attached to its middle bar.

To fix sewing cotton or any other fibre upon foundation the latter should be first waxed into its frame as described and then laid, board and all, upon a table. The cotton, well soaked in thin glue, is now placed upon it in parallel lines from top bar to bottom edge, at intervals of about 1½ inch. The gentle passage of the finger along each thread will attach it with sufficient closeness. The glue having dried, the foundation cannot droop, and the comb will be built out before the threads are attacked. If the glue has been used thick I find the threads are not touched for several days, but ultimately they are teased out and the comb repaired completely, leaving no trace whatever of the path the tiny bristles took. If the bee-keeper is not nervous it will save his bees much to remove the frames and pull away the cotton, but with those whose prudence overmasters valour it is enough to leave the bees to accomplish the whole business. Better far than thread or cotton (the former being unnecessarily tough) I have found fine silk glued as before. Where this passes through a cell wall or very near to one the bees do not remove it, but where it cuts through a cell they bite it completely away, and strange is the appearance of combs with tiny bits of silk the sixth or seventh of an inch long, showing at regular intervals in perpendicular lines. (May I here say these combs and all and sundry in my possession I am quite willing to show to bee-keepers whose interest is sufficiently keen to induce them to call?) Silk is a dried animal secretion, and, as surgeons well know, is not liable to change by contact with animal fluids, and so is quite harmless to the grub. Hair gives results as good as silk. Political economists say that the value of an article in demand increases with its scarcity, so I have not been extravagant enough to experiment with my own, but a young lady of my household supplied my need so far as my hives were concerned. The hair, well glued, is built into the comb, and subsequently removed without any damage to the cell walls during the operation; but lest the fair friends of my bee-keeping readers should be short of all their treasures, I recommend silk as more easy of manipulation. In cases where the bee-keeper intends to remove the threads himself cotton is all-sufficient and less costly. Varnish is not superior to glue and more troublesome, and so should be discarded. Space forbids my saying more of my rakes than that they should embrace the bottom as well as the top bar. As I am now using them no wax fixing is required, and the foundation gives absolutely perfect combs when the sheet fills the frame from top to bottom and from end to end. The exact means by which these eminently satisfactory results have been obtained I will explain in a future issue.—F. CHESHIRE, *Avenue House, Acton, W.*

ZINC GRATINGS FOR HIVES.

BEES can easily be prevented from having bee bread and brood in supers on straw hives having a hole at the top if a grating be placed in the hole, the space between the bars being the exact width of a worker's cell in the comb. Through this the queen cannot pass; as no brood can be laid no pollen will be provided. I used to soften a piece of gutta percha with boiling water or in a saucepan, placed it round in the hole, and across the hole resting on this gutta percha I placed little sticks of peeled privet, having a stick that would exactly fit into a worker's cell. With this I regulated the distance between my little bars. I fastened the bars by heating a piece of iron wire and putting it on the gutta percha where the two ends of the stick were to rest. Let one get firm before beginning to place another. The space must not be too narrow. If little wooden or zinc gratings were manufactured they might easily be inserted in any hive and benefit the poor people very much.—S. B.

OUR LETTER BOX.

BEES BOOK (Oo-ee-Be).—There are many useful books on bees published, but "The Apiarian," by Alfred Neighbour, would probably be as suitable as any for your purpose.

SECOND SWARMS—PIPING QUEENS (T. King).—Queens are matured from eggs in fourteen days. The first seven days they lie in open cells, the last seven days they are capped or sealed up. The first queen that comes to perfection gives tongue and calls "off, off, off," then leaves her cell and commences to speak in another tongue "peep, peep, peep." Her sisters come to perfection and call "off, off." This piping or harking continues three days and

nights without cessation if the bees resolve to cast off a second swarm. If they resolve not to send off a second colony they hush or stop the piping queen, and kill and cast out all that are in their cells. In taking second swarms artificially we cut out two of the royal cells containing harking and ripe queens, roll them up in a piece of paper or a corner of our handkerchief, keeping them separate; then we drive half the bees of the stock hive into an empty one, and give each swarm or lot of bees a queen, or royal cell containing a queen. Of course there is also the piping queen in one of the hives which will kill her rival sister if she can, but we never heed her, or care which shall be victorious. Without piping queens second swarms are not obtained or obtainable.

CANDY FOOD FOR BEES (S. B.).—Mr. Baitt's recipe for making this food has been published in the Journal and is as follows:—Boil in a common pot as much sugar as may be required, with as little water as will melt it—say half a teaspoonful to each pound of sugar. Keep stirring briskly for ten minutes or so; then try a few drops on a spoon, holding it in cold water. If it gets stiff enough to draw into a thread take the pan off the fire. The mass if now poured out would give a very thick syrup or clear barley sugar; but if stirred briskly in the pan for a few minutes before pouring out it will begin to thicken and granulate, and if now poured out and cooled will furnish a hard white cake in which there still remains so much water thoroughly incorporated that, though it will not melt and run down as barley sugar does, it is very easily dissolved by the bees. The flour—common wheat flour—is stirred in just before pouring out, a handful to each pound of sugar. The best form of cake is had by spreading a sheet of thin paper over a soup plate and pouring about a pound into each. In ten minutes or more it may be lifted out and the paper taken off. The cake is then slipped under the quiff of a frame hive, or laid over the feed hole of a skep, and warmly covered up. The bees will to some extent store the flour as they do pollen, but generally it will be found that it is all used at once by the bees for their own nourishment or that of their young. Should anyone fail to get a good hard cake at first, it can be re-melted and boiled a little longer. The flour now in it will, however, cause it to boil over very readily.

SYRUP FOR BEES (Idem).—Mr. Pettigrew never found any injury to bees or combs from using syrup mixed at the rate of one pint of water to 1 lb. of sugar, and this is the mixture he has given to bees for many years. All artificial syrup used for winter food should be boiled before it is given to the bees. Loaf sugar is used. The time of tapping mentioned applies equally to the second as to the first swarm.

REMOVING BEES FROM ROTTEN SKEP (Idem).—It is impossible to determine the condition of the interior of the hive you describe as so old. We should recommend driving all the bees and putting them as a swarm on the stand the hive in question now occupies; or if it is too old to bear driving, put a new skep or frame hive upon the stand, and cut carefully into the old removed skep, keeping the bees in check by smoke; peel away the straw by degrees until one comb is freed, carry this to the new hive and brush off all the bees on to a horizontal board placed against the entrance hole. Repeat the operation with each comb till every bee has been removed. The brood may now be saved by skewering the brood combs with a natural amount of space between them into a straw cap and placing this over the made swarm. The bees will feed and keep warm until all have hatched out, when the old comb should be taken away, then take care to return the bees as before. You will find many hives advertised in our columns. If you intend really managing your bees select a frame hive, but beyond this it would be invidious to particulars.

LOAF OR MOIST SUGAR FOR FEEDING (Miss B. Norwich).—Loaf sugar is in every way better than moist, and when the impurities of the latter, which of course are not sugar and have no feeding properties, are considered it is quite as low in price. The colouring matter of moist sugar consists partly of caramel, which is very injurious to bees, and partly of animal matter, minute acari existing in many samples in almost inconceivable numbers.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51°32'40" N.; Long. 0°8'6" W.; Altitude, 111½ feet.

DATE.	9 A.M.					IN THE DAY.				
	Baromet. ter at 32° and Sea- Level	Hygrom- eter.		Direction of Wind.	Temp. of Air at 5 feet.	Shade Tem- perature.		Radiation Temperature.		Rain.
		Dry.	Wet.			Max.	Min.	In sun.	On grass.	
1880.	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	In.
May.										
Sun. 15	30.147	55.3	48.0	N.E.	55.1	55.5	45.4	120.3	40.5	—
Mo. 16	30.238	48.7	45.7	N.E.	55.3	55.5	41.6	117.7	36.5	—
Tu. 17	30.273	49.5	45.9	N.	55.0	51.3	39.1	107.7	33.5	—
We. 18	30.259	49.5	45.5	N.	54.3	51.5	37.3	99.0	32.5	—
Th. 19	30.178	62.5	56.5	N.	54.4	75.4	47.5	122.9	41.0	—
Fri. 20	30.224	62.7	56.0	N.W.	55.5	77.7	49.6	126.5	44.7	—
Sat. 21	30.247	60.5	55.5	W.	57.3	64.5	49.5	91.9	44.5	—
Means.	30.165	55.5	48.1		55.5	65.7	44.1	111.5	39.5	

REMARKS.

16th.—Fine and bright, but cold high wind and dusty.
17th.—Dull morning, but very fine bright day, nearly cloudless sky, cold wind.
18th.—Cloudy morning, very fine bright sunny day, cold wind.
19th.—Fair generally but overcast and cool, few drops of rain in afternoon not measurable.
20th.—Morning cloudy, sunshine in afternoon, fine evening.
21st.—Very fine, bright warm day throughout.
22nd.—Fair but overcast, windy and dusty, clear evening.
Another week of drought; only 0.02 inch of rain has fallen this month and only 0.04 inch since the 20th of April, and the air continues very dry, although the wind has got round to the west.—G. J. SYMONS.

COVENT GARDEN MARKET.—MAY 26.

OUR market is well supplied with all classes of goods, and, demand being anything but brisk, prices are somewhat lower. Large quantities of Paris goods are now reaching us, such as Cherries, Apricots, and the better sorts of vegetables. Prices remain practically the same as last week.

WEEKLY CALENDAR.

Day of Month	Day of Week	JUNE 3—9, 1880.	Average Temperature near London.			Sun Rises.		Sun Sets.		Moon Rises.		Moon Sets.		Moon's Age.		Clock after Sun.		Day of Year.
			Day.	Night.	Mean.	h.	m.	h.	m.	h.	m.	h.	m.	Days.	m.	a.		
3	TH	Linnean Society at 8 P.M.	70.3	44.3	57.3	3	49	8	7	1	15	3	56	25	2	3		155
4	F		68.4	44.4	56.4	3	48	8	8	1	35	5	6	26	1	53		156
5	S		71.5	47.4	59.0	3	47	8	9	1	59	6	14	27	1	43		157
6	SUN	2ND SUNDAY AFTER TRINITY.	70.6	47.6	59.1	3	47	8	10	2	59	7	16	28	1	31		158
7	M		69.3	46.8	58.0	3	46	8	11	3	6	8	12	29	1	20		159
8	TU	Great Show at South Kensington, four days.	70.6	46.6	58.6	3	46	8	12	3	53	8	58	1	1	8		160
9	W		70.7	47.4	59.0	3	45	8	13	4	49	9	36	2	0	57		161

From observations taken near London during forty-three years, the average day temperature of the week is 70.1°; and its night temperature 46.3°.

NOTES FOR DRY WEATHER.



HE drought is already causing uneasiness amongst farmers in many parts of the country, and if it continues many gardeners will be in a similar position. We have had scarcely any rain since last October, and I find the ground is dry to a great depth where it has been bearing crops throughout the winter and spring. Young wall trees have had to be supplied with water to keep them growing, and bedding plants which were planted about the end of April have also had to be watered to induce them to make a start. Young vegetables will endure much dry weather with us before they suffer. I trench all the ground I possibly can during the winter months, and that with the hoe being constantly employed on the surface throughout the summer saves much labour in watering.

I manage young plants of Lettuces, Brussels Sprouts, Cauliflower, &c., very simply. They are transplanted when very small, consequently there are not many roots lost if lifted carefully. In ordinary weather a mixture of soil and water is made, and the roots of the plants are dipped therein before planting. In weather like the present, in addition to the above treatment drills are drawn and sufficient water run down them to moisten any dry soil before planting. The plants are set out without delay, and in a couple of days will be producing roots. Many border plants are treated in exactly the same manner, such as Pyrethrum Golden Feather, Asters, Helichrysoms, Phlox Drummondii, Marigolds, and others which are raised in frames. Plants which have to be lifted with balls of soil, such as Celery, are grown in a rich and rough compost, and previous to lifting are well supplied with water. For Celery a layer of old Mushroom dung is placed along the surface of the trench. Some of this is worked-in around the plants as planting proceeds, whilst the rest remains as a mulching. Watering the soil in the trenches is continued with the planting. Late crops of Celery are pricked-out like the other vegetables mentioned. Before sowing seeds we water the drills through the rose of a large watering-can, at the same time moistening the soil on which the seeds fall, and that with which they are covered. For Peas, narrow trenches are taken out 6 or 9 inches in depth, water is run along the trench, the Peas being sown and covered at once. Where seeds are sown in beds the latter are watered and covered with mats until the seedlings appear through the soil. In planting-out bedding plants, such as Pelargoniums, Verbenas, and others which are not set out very closely, the soil is rendered firm, placing it back round the plants, and thus leaving a small basin round each. Water is then very expeditiously supplied, and in the course of a few hours the holes are filled up and the surface of the bed levelled. For carpet-bedding plants nothing can be done but watering freely the entire surface of the soil. A mulching of old Mushroom dung on the surface of these beds we find of much benefit.

It is impossible to supply every plant in a large garden

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with water just at the time it is required. The most important crops, such as Peas and Celery, also fruit trees, and flower beds, must be first attended to; and it is much better to do the work systematically, giving a sufficient quantity to each crop rather than dribbling the water over the entire garden without any portion being thoroughly supplied. Any plant that receives water ought to have it equal to about 3 inches of rain, certainly not less than 2 inches. Thirty gallons of water to 20 superficial feet of border, are about equivalent to 3 inches of rain, 20 gallons being equal to 2 inches. Of course the dryer the soil before supplying water the more will be required to moisten it to a good depth. Especially in the case of inside fruit borders no approach to dryness should be tolerated. Well-made borders should be always kept in a moist state, and that necessity is greatly increased in the case of plants in pots. In hot weather plants which are exposed to the sun will usually require water twice a day—in the morning about ten to eleven o'clock, and again in the afternoon from three to five o'clock. If a plant is not allowed at any time to become dry at the roots it is more easily managed in all respects; fewer insects trouble it, and the general appearance of the plants is always very much better than in the case of those that are allowed to become even a little dry.—R. P. BROTHERSTON.

HELPING GRAPES TO COLOUR AND RIPEN.

THE seasonable words of "A NORTHERN GARDENER," page 369, on "Overcropping Vines," should be read by all who grow Grapes. Overcropping Vines is one of the most common evils in Grape-growing, and it is not confined to young men. Many amateurs and young gardeners in their first places have often a great desire to make a good "show," not taking into consideration that finely finished fruit always indicates more skill in cultivation than the heaviest crops badly coloured or ripened. Those not acquainted with the bearing powers of their Vines should be very cautious in cropping. The first year in cultivating strange Vines half a crop well matured will be more creditable than the opposite; and when it is seen that Vines will bear and ripen a certain crop well, it may be increased the following year, and by this means we soon know how many bunches each Vine is capable of bearing. Apart from this, however, there are both employers and gardeners who frequently insist on excessive crops being left on the Vines, and trust to good weather or other favourable circumstances to assist the fruit in colouring and ripening. This often leads to disappointment, but it is in such cases that a little extra care sometimes assists the crop to finish as desired.

In the first place little should be expected by either employer or gardener from Vines which are not in fairly good health and condition, as Vines in bad health can never be expected to finish either a light or heavy crop well. I have often observed that many Vines suffer from overcropping from the time the berries are thinned—that is to say, if an excessive crop is left on until colouring is commencing, and then reduced to a fair average crop, it will have the same effect in preventing the Grapes from maturing as if all the

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bunches had been allowed to remain. Some, who see that their Grapes are not likely to attain that high finish so much valued by gardeners, thin out many of the bunches after they commence colouring; but it is too late then, and does not improve the bunches retained in the least. I wish to draw particular attention to this fact, because some say, "Oh! we will leave a heavy crop on now, and reduce them if we see they are too many to finish at colouring time." Begin with a fair average crop at first, then a little assistance will be beneficial.

Abundance of water at the roots is absolutely indispensable. Stunt them in this, and the most vigorous Vines in the country will fail to finish their crops satisfactorily. It is wrong to have stated times to water Vine borders, such as once when the fruit has set, once when it has stoned, and finally when it begins to colour. I know a garden where all the Vine borders are watered thoroughly about once a week when the Grapes are swelling, and badly coloured fruit is unknown there. The borders are well made and drained; but no exception need be made on this account, as that should be the case always. It is from now onwards to the end of August that water will be most required, and I can safely assert that nothing will assist the Vines and Grapes more.

Ventilating is another important matter in Grape-finishing. Keeping the houses closed all night when the fruit is gaining full size hinders colouring very much; admitting but little air during fine weather has the same effect. Allowing plenty of air to circulate through the house night and day in proportion to the state of the weather is one of the best means anyone can practise to secure well-finished Grapes. This, with reasonable cropping and plenty of water at the roots, will secure fruit of the highest excellence. From now on to the month of October fresh air should be admitted daily to all Vines. Cold draughts must be avoided, and this may always be done by keeping the front ventilators closed during cold weather.

The atmosphere of the vinery should always be kept humid. This assists greatly to keep down insects, gives the foliage health and strength, and is altogether much better for the Vines and fruit than constant syringing. Until colouring begins the vinery may be closed for an hour or two every afternoon; but if this be continued when the fruit is colouring the moisture in the atmosphere will cause the bloom on the fruit to run in streaks or spots. No Vines bearing fruit should be shaded, as the brighter the weather is the quicker does the fruit develop and colour. Any burning of the leaves or scalding of the fruit proves that the Vines do not require shading to make them more tender, but it indicates that water at the roots, in the atmosphere, and efficient ventilation has not been carefully attended to. When any sign of bad colouring or deficient finish is apparent the evil will be remedied to a greater extent by keeping the temperature at about 65° than by raising the heat to an excessive degree.—**A KETOUEH GARDENER.**

GARDENING IN INDIA.

I WRITE to you from a far-away corner of the world, where your valuable paper finds subscribers, among whom I have been one for a year. Though circumstances of soil and climate here are so entirely different from those for which you write, I have as an amateur found many very useful hints in your paper. The taste for amateur gardening is slowly and gradually growing among the native gentry, and we can boast of dozens of gardens that would vie with any in the world for their tropical luxuriance. But when I have said this I have said the utmost that can be urged for them from a horticultural point of view. Unfortunately there is no society nor a journal by means of which amateurs may exchange views or seek advice on most questions.

Seeing the way in which week by week you take the trouble to answer all sorts of ordinary and extraordinary questions propounded by your readers, I have been tempted to join the ranks of your interrogators, believing that you will take the trouble to enlighten one who is absolutely without any other source of information or advice.

The climate of this place is rather temperate and more equable compared with that of the greater portion of India. During our cold weather the outside night temperature ranges between 55° and 70° Fabr., while during the daytime it is about 80° in the shade. The prevailing winds are from the north-east. During summer the temperatures under similar circumstances are 75° to 80° at night, and 85° to 90° at mid-

day, with a constant westerly sea breeze. During the monsoon, or four rainy months, the prevailing winds are from the S.W., with strong gusts during the first four weeks, when almost all vegetation directly exposed to them suffers more or less. The average rainfall during these four months is between 75 and 80 inches. Our soil is mostly light reddish rich clay tempered with coarse sandy and pebbly basalt, being the *débris* of the prevailing rocks on the island. Most of the tropical fruit trees thrive exceedingly well—the Mango, the Fig, the Custard Apple, the Guava, the Papaw, and many varieties of the Plantain and others being nowhere else in India of better quality.

The Peach, Apple, Apricot, Grape, and Strawberry have been tried with indifferent success on the island, though they to some extent succeed on the hills. I think this indifferent success has been owing to various causes, first among them being the want of proper choice of varieties that would as nearly as possible suit the conditions of our soil and climate.

I have to request you to be good enough to advise me in your columns as to the suitability of any summer or autumn varieties that can be tried here as pyramids in pots or tubs that can be placed in the shade of what we here call a betel house, which is shaded during the hot part of the day by an open-work screen of bamboo or grass. I shall also thank you to recommend to me any standard work on the cultivation of fruit trees in pots.—**A PARSÉE, Bombay.**

[We shall be very glad if we can be of use to you and others of our Indian subscribers. We have sent you a book from which you will gather much useful information, and if there are any points on which you or your friends need further instruction we will readily reply through our columns to any questions that are submitted to us.—**EDS.**]

NOTES ON HARDWOODED PLANTS.

ANTICIPATING the wants of some of your readers I send a few seasonable notes on *Ericas*, *Acrophyllums*, *Camellias*, and *Azaleas*. Heaths that have flowered should be cleaned by removing the seed vessels and faded blooms. Increased light and heat will necessitate increased supplies of water. It is a good plan to examine the plants morning and evening; it involves more labour, but may save valuable specimens. *Ericas* required for August and September exhibitions of such forms as *Antiniana*, *Irbyana*, *Jacksoni*, *Marnockiana*, and *retorta* major should be examined to see what condition they are in, so as to regulate them for the time they will be wanted. Impatient generally of being retarded, they may during the summer be so placed as to bring them on a little more slowly without injury. A house with a north aspect is most suitable. *Acrophyllums* should have the seed vessels removed with a pair of scissors, as if the points of the shoots are injured they start very indifferently. Plants infested with brown scale should be cleaned as soon as the flowering is over, as there is less danger of injury to the plants from the absence of young growth. The plants should be immersed in an insecticide, or if too large to be so treated they should be thoroughly syringed. The insecticide should be applied at a temperature of 90°, which will soften and remove the glutinous matter deposited on the leaves. If the plants are much infested keep them cool for a few days so as not to encourage growth, and if necessary repeat the application. *Camellias* will now be in full growth, and should be encouraged by a little extra warmth, shade, and plenty of moisture overhead and at the roots. The latter remarks only apply to plants in health, as sickly plants must not on any account be kept too wet, or they will probably lose the few roots they have. Any early-flowering plants requiring repotting should be attended to as soon as the buds are set, for if these become large before the potting is carried out it is likely they will drop in consequence of the check. *Azaleas* that require larger pots must be attended to as soon as the flowering is over, allowing a little time for the roots to become active. Good fibrous peat with about a sixth of crystal sand is the most suitable compost, draining the pots well; and as plants in good condition will have the ball a thorough mass of roots, the new soil must be made quite as firm as the ball of the plant, or the water will pass through it, leaving the central mass dry. Light potting is a very common mistake made by amateurs in the culture of hardwooded plants.—**CULTIVATOR.**

THE MOLE CRICKET.—Seeing in the last Journal a reply to a question about the mole cricket, I beg to submit a mode of

destruction of that most troublesome insect. Follow the horizontal passage the cricket has last made until you come to the downward passage; prevent the soil from filling up the hole; then get a Vine or part of Rhubarb or Cabbage leaf, insert it as far as possible into the passage, pour about a quart of water into the hole over the leaf (which is inserted to prevent the washing-in of the soil), follow up with half a tumbler of oil. The cricket will within a minute make its appearance at the mouth of its retreat; if it does not emerge within that time give another dose. The best ferret, however, is a few table-spoonfuls of common tar, nothing will fetch crickets out quicker.—A. WIFF.

EARLY STRAWBERRIES AND POTATOES.

WE gathered the first dish of Strawberries out of doors on May the 24th, from the young Black Prince plants of which I sent you a sample a few weeks ago. The fruit was of good size, fine colour, and of excellent flavour; now, May 29th, they are ripening fast, and to show it is more the variety that comes thus early than the influence of climate, I may say that the fruit of Vicomtesse Hericart de Thury, on plants the same age, planted on the same piece of ground, and treated in all respects the same, is not half swelled, while Keens' Seedling, President, and one or two others are still later.

Some of the produce of Rivers' Royal Ashleaf Kidney Potato, which was planted on a south border on February 5th, was lifted on May 28th—about sixteen weeks after planting, and the tubers were of good average size, very firm, and numerous. Last year the very first and earliest Potatoes we lifted were much diseased, but no indication of it is visible this time as yet. In my opinion wind frequently retards the growth of early Potatoes. The stems are blown about so much that it is impossible for them to grow well, and at times there is more draught about south borders than "shelter." To secure the latter more thoroughly we sow rows of Peas, and the stakes which are placed to these shelter the Potatoes.—J. MUR.

ROSE PROSPECTS.

NUMBERS of our Roses are affected much in the same way as Mr. Tinsley's. The rosery here was planted three years ago, a belt of shrubs surrounding it sufficiently to afford shelter. The requisite drains were made, all the beds were filled with good loam and a little decayed cow dung to the depth of 8 feet. The plants became well established and have bloomed freely, especially last year. They also made fine healthy growth, but the nearly constant downpour of rain with so little sunshine left the wood too unripe to endure the unusually severe winter and spring. This I consider the cause of the shoots now turning brown. I find most of the roots healthy, and suckers either of Briars or Manetti just appearing on the plants that have suffered. Frost, although so severe during the winter, could not penetrate the soil, as I had the beds well covered with dung and litter. I also recently visited a neighbour's rosery, where I noticed a number of plants similarly unhealthy.—J. JONES, *Gardens, Cloverley*.

I HAVE this day, the 22nd of May, been examining my Roses, and out of about 180 varieties I can only find one—namely, Jules Margottin, that is not suffering from the effects of the severe winter. Charles Lefebvre is considered hardy, but that has shared the same fate as the rest. The old plants continue dying still. I never remember seeing my plants so unhealthy, I think it must be due to the two successive severe winters we have experienced.

I find those plants on the seedling Briar are the least injured, although the Manetti suits my gravelly soil best. Altogether I think it must be a bad Rose season, for the maggot is very abundant. I was in a garden yesterday where there is a small collection of Roses, and they look equally unhealthy, although situated on a hill, and generally to a great extent escape unhurt. Nearly all that I budded last year are dead. The lowest temperature we registered was 4° above zero, but it was of long duration.—J. T., *Upper Ascenden, Henley-on-Thames*.

My Roses are affected in the same way as "D., Deal's," for after starting into growth and being pruned the shoots have died, a weak growth afterwards commencing below the parts affected. I have lost some trees fourteen years old in this way. Standards have fared the worst with me, many having died to the ground. I have lost all my Teas out of doors

except the old Gloire de Dijon. Those that have endured the winter best are Marquise de Castellane, Marie Baumann, La France, Pierre Nottung, Jules Margottin, Prince Camille de Rohan, Sénateur Vainse, Felix Genero, and John Hopper. Capitaine Christy, Abel Grand, Charles Lefebvre, Maréchal Vaillant, and Duc de Cazes have done badly; several plants of each variety are dead, and if the weather remains as it is Rose prospects in the north of Northamptonshire will not be very promising.—J. H. D.

CRYSTAL PALACE SHOW.

MAY 29TH.

THE annual Exhibition of plants at Sydenham was held on Saturday last, and although perhaps somewhat less extensive than on previous occasions, it was yet very attractive, several handsome collections being contributed. The principal feature of the Show was the groups of magnificent Roses from Mr. C. Turner of Slough, and Messrs. Paul & Son of Cheshunt, which occupied a position in front of the theatre, and were very greatly admired. Next in order of attractiveness were the numerous and beautiful miscellaneous groups from various nurserymen, without which the Show would have presented a meagre appearance. Stove and greenhouse plants were represented by vigorous specimens, but in several instances rather deficient in flowers, especially among the Azaleas. The fine-foliage plants were, however, generally of excellent quality, some of the Crotons being shown in extremely fine condition. A few individual collections also possessed considerable merit, but these will be referred to under their respective classes.

STOVE AND GREENHOUSE PLANTS.—The handsome specimens possessed by Messrs. J. Jackson & Son, Kingston-on-Thames, easily ensured to them the chief prize in the nurserymen's class for nine, their collection being as even and fresh as could be desired. The most noteworthy plants were *Pimelea Hendersoni*, very profusely flowered; *Anthurium Schottianum*, with over fifty brightly coloured spathes; and *Azalea Roi d'Hollande*, bearing a large number of richly coloured blooms. The second position was obtained by Messrs. B. Peed & Sons, Norbury Nurseries, Lower Norwood, with healthy plants, among which an enormous *Erica Cavendishiana*, about 6 feet high, and well flowered. (One other collection was staged in this class by Messrs. J. Peed & Son, Roupell Park Nurseries, Lower Norwood, which well deserved the extra prize awarded for it. In the corresponding class for amateurs the prizes were accorded to Mr. B. Peed, gardener to Mrs. Threlwell, St. John's Lodge, Lower Norwood; and Mr. J. Child, gardener to Mrs. Torr, Garbrand Hall, Ewell, in the order named, both exhibitors contributing well-grown specimens, those from the former being perhaps slightly more even. After the awards had been made the question arose whether it was desirable to allow Mr. B. Peed to exhibit both in the amateurs' and nurserymen's classes, which he claimed to do, as being a gardener and nurseryman. This question requires further consideration. Two collections of six plants were staged, the best being from Mr. B. Peed, and the other from Mr. J. Weston, gardener to D. Martineau, Esq., Clapham Park; *Azalea Duc de Nasseau* and *Erica Cavendishiana* from the latter being especially noticeable for their size and vigour.

The only really noteworthy Azaleas were those from Mr. C. Turner, who was first with nine and eighteen; and from Mr. Child, who gained a similar position with an amateur's nine. All these were well flowered and brightly coloured. Heaths were in first-rate form except those from Messrs. J. Jackson & Son, which were adjudged the premier prize in the nurserymen's class for nine specimens.

Roses.—The two competitors in the class for nine Roses in pots were Mr. C. Turner and Messrs. Paul & Son, Cheshunt, whose gigantic specimens are so well known. The Slough plants were adjudged the chief honours, but both collections were in such excellent condition and were so equal in point of merit, that the Judges would not have erred if they had awarded them equal first prizes, as they did to the chief exhibitors in the class for *Calceolarias*. Mr. Turner was the only exhibitor of eighteen plants in pots, and secured the chief award with vigorous, compact, well-flowered specimens, among which *Exposition de Brie*, *Marie Baumann*, *John S. Mill*, and *Mlle. Thérèse Levet*.

Pelargoniums.—The best Pelargoniums were from Slough, Mr. Turner's plants being first in the nurserymen's classes for Show and Fancy varieties. They were marked by the freshness, bright colours, and fine flowers which invariably characterise them even in unfavourable seasons. Among the Show varieties that were in especially noteworthy condition were *Highland Lassie*, *Clanial*, *Red Gauntlet*, *Maid of Honour*, *Snowflake*, and *Prince Leopold*. The best Fancies being *Mabel*, *Fanny Gair*, *Henry Bailey*, *Roi des Fantaisies*, and *The Shah*. Messrs. J. Peed & Sons who followed with the Show varieties had very well grown plants; one, an early flowering or "decorative" variety—*Mermerus Improved*—was especially remarkable for its fine trusses and rich colour. In the amateurs' class for nine Show Pelargoniums Mr. F. W. Griffin, gardener to J. Willcocks, Esq., Eliot Bank, Forest Hill, was the

only exhibitor, and obtained the chief prize with vigorous plants that were bearing large and brilliant flowers. Mr. Henry Coppin, Rose Nursery, Shirley, was adjudged the second prize for Zonal Pelargoniums, healthy plants but with few flowers. His collection was the only one staged in the class.

Begonias of the tuberous-rooted forms were well represented, no less than five competitors entering the class for nine plants. Messrs. John Laing & Co., Forest Hill, easily secured the premier award with robust specimens of admirable varieties. The following were the most remarkable:—*Oriflammé Improved*, flowers very large and of good colour; *Massange de Louvrex*, rich colour; *Rosea superba*, very delicate tint; *Trocadero*, enormous flower, rich scarlet; *Reine Blanche*, pure white; J. W. Farrand, large flowers and rich vermillion; and Lady Hume Campbell, a handsome novelty with delicate pink-tinted flowers of great size, excellent form, and very free; the habit is robust, and altogether the variety is an acquisition of considerable value. Mr. Henry Coppin was placed second with a very good collection, in which a seedling named W. E. Gladstone with large uncommonly rich crimson scarlet flowers was especially striking.

Calceolarias were exhibited by Messrs. Dobson & Son, Woodland Nursery, Isleworth, and Mr. Bird, gardener to A. Causton, Esq., Lodge-moore, Alveyn Park, Dulwich, who were adjudged equal first prizes in the class for nine plants. Both collections were extremely good. Mr. Bird's including several remarkably handsome varieties of good habit and well grown; Messrs. Dobson's plant possessing that compactness of habit and brightness of colours for which they are justly celebrated. Mr. H. Coppin obtained the second prize with smaller plants but in fairly good condition.

ORCHIDS.—These were not very numerous, but several of the collections included plants of great merit. The best nurserymen's nine specimens were from Mr. B. S. Williams, Upper Holloway, which were in superb condition. Among the most beautiful were a fine variety of *Cattleya Warneri*, a large specimen of *Epidendrum vitellinum majus*, *Odontoglossum vexillarium* in beautiful form, *Laelia purpurata*, *Cattleya Mossiae*, and *Cypripedium niveum*. Mr. Henry James, Castle Nursery, Lower Norwood, was second with a pretty collection, in which were a fine specimen of *Dendrobium sesavissimum* bearing seven spikes, and *Odontoglossum vexillarium* with twelve long spikes of flowers. In the corresponding amateurs' class there were four entries, the chief honour being obtained by Mr. Child with bright healthy plants. *Saccolabium retusum* had three fine spikes of flowers; *Aërides Fieldingi* was also flowered well. A small *Cypripedium barbatum* had fourteen blooms, and several others were equally good. Mr. A. Cave, gardener to D. G. Straight, Esq., The Limes, Lower Tulse Hill, followed with a neat collection, including a good *Phalaenopsis grandiflora* and *Odontoglossum citrosimum roseum*.

FIVE-FOLIAGE PLANTS.—From the two classes devoted to these plants Ferns and Palms were excluded, yet some handsome collections were staged that for the vigorous health of the plants composing them could scarcely have been surpassed. Mr. B. S. Williams had the premier nurserymen's group of gigantic specimens, of which the most remarkable were the elegant Beefwood (*Ocotelea sumatrana*) over 6 feet high, *Encaphalartos Frederici Guilielmi*, *Pandanus Veitchii*, and *Dasylirion acrotrichum*, all in highly creditable condition. Messrs. Hooper & Co., Covent Garden, held the next position with a good group. The principal amateurs' collection was from Mr. C. Rann, gardener to J. Warren, Esq., Handcross Park, Sussex, and was, as is usual with that exhibitor's productions, of considerable merit; a *Cycas revoluta* of enormous size, *Dieffenbachia illustris*, *Croton volutus*, *C. interruptus*, and *Encaphalartos villosus* being admirably represented. Mr. J. N. Penfold, gardener to Rev. Canon Bridges, Beddington House, Beddington, followed with good plants, of which *Spathiphyllum pictum*, *Anthurium regale*, and *Dieffenbachia Bausei* were most noteworthy.

Crotons were exhibited by Mr. Rann in extraordinarily fine condition, the specimens being of great size, very healthy, and with richly coloured foliage. *C. angustifolius* was over 5 feet high, of pyramidal form and good colour; *C. Hendersoni* of immense size, *C. Youngi* fine, *C. Weismanni* 6 or 7 feet high, delightfully fresh; and *C. Andreanus* in magnificent condition, one of the grandest specimens of this beautiful *Croton* ever exhibited. Mr. Penfold again followed with smaller but well-grown plants.

Dracenas were shown by Mr. Rann and Mr. Bird, who obtained the prizes in that order. Mr. Rann's plants were healthy and well-coloured, especially *D. anerleyensis*, *D. Robinsoniana*, *D. Rex*, *D. vivicans*, *D. Goldiana*, and *D. amabilis*. Mr. Bird's specimens were not so large, but they also indicated careful culture.

Ferns.—Mr. B. S. Williams was the only exhibitor in the nurserymen's class, and obtained the chief award for handsome compact plants, among which the most notable were *Adiantum Williamsii*, *A. gracillimum*, *Microlepia hirta cristata*, and several *Gleichenias*. Mr. C. Horton, gardener to H. Moser, Esq., Westwood, Beulah Hill, Upper Norwood, obtained similar honours in the amateurs' class with fresh healthy specimens of *Davallia Mooreana*, *Adiantum formosum*, *A. cardiophyllum*, *A. farleyensis*, and others. The remaining prize was awarded to Mr. Penfold for scarcely less vigorous specimens.

There were three exhibitors of groups of plants arranged for effect—namely, Messrs. Laing & Co., Mr. Bird, and Messrs. J. Peed & Son, all of whom staged attractive collections, but the awards of the Judges in this class caused considerable dissatisfaction to many exhibitors and visitors, who were unable to perceive on what grounds Messrs. Peed & Son were placed before Messrs. Laing & Co., nor why Mr. Bird's group was left unrecognized when it was evidently at least equal to the first-prize collection. Messrs. Laing's group was tastefully arranged, contained a pleasing diversity of flowering and fine-foliage plants, and although slightly crowded was unquestionably superior to Messrs. Peed's, which was light but by no means elegant. Mr. Bird's was an ordinary collection of plants but bright and pleasing, and would have been justly placed second to Messrs. Laing's first.

First-class certificates were awarded to the following exhibitors for the plants mentioned:—Mr. B. S. Williams for *Nepenthes Williamsii*, *Croton Warreni*, *Pteris internata*, and *Anthurium Warocqueanum*; Messrs. J. Laing & Co. for Tuberous Begonias Mrs. Laing and J. S. Law, the latter bearing large flowers of good form and substance, colour a rich scarlet, it is extremely showy and distinct; Messrs. J. Jackson & Son for "decorative" Pelargoniums Captain Beattie and Rosy Morn, the former having flowers of a rich crimson colour, and the latter those of a bright rosy pink shade—both are very free in habit, blooming profusely; Messrs. J. Peed & Son for a fancy Pelargonium Duchess of Connaught, a neat and pretty variety, flowers white marked with rich purple, very symmetrical and free.

The miscellaneous groups were numerous and extremely attractive; those contributed by the following exhibitors were especially good, and extra prizes were awarded for them. The most noteworthy of all was that staged by the General Horticultural Company, which consisted of *Dracenas* and a margin of *Gloxinias* and *Adiantums*, a neat pleasing arrangement. About 160 *Dracenas* were staged, over forty distinct forms being represented, among which the many beautiful hybrids and crosses raised by Mr. Bause were very conspicuous. The plants were all in excellent condition, vigorous and well coloured, the distinct and bright appearance of the group attracting considerable attention and admiration from the visitors. Mr. B. S. Williams also contributed a large and interesting collection of choice plants, including a great number of beautiful novelties, three of which were certificated as stated above. Messrs. J. Laing & Co. sent an attractive group of Calceolarias and Pansies. Mr. H. Cannell exhibited an extensive collection of *Coleuses* very beautifully coloured and good, also baskets of Pansies, small succulent plants, &c. Mr. Bird brought his fine standard Mignonette, referred to in our report of the Royal Horticultural Society's meeting last week. Messrs. F. & A. Smith of Dulwich sent collections of Pelargoniums; Mr. H. Hooper of Bath Pansy blooms; Mr. Griffin a group of *Gloxinias*; and Mr. Boller, Kensal New Town, a collection of Cacti.

EUPHORBIA JACQUINIÆFLORA AND POINSETTIAS.

No plants are more valuable during the winter than these, and the present is the time for obtaining them. Successional cuttings of the *Euphorbia* may still be inserted, taking them off with a heel. Cuttings inserted previously should be potted as soon as they are well rooted, and when they are established in the fresh soil pinch out their points to induce a number of flowering sprays. The earliest-struck plants will by this time have filled the pots with roots, and should be placed in their flowering pots. Being spare-rooting plants 6, 7, or 8-inch pots, according to the vigour of the plants, are large enough; of course older plants may be shifted into 10 to 12-inch pots and stopped once, but not more. Four parts of mellow loam, one part of old manure or leaf soil, and a part sand will grow them well. To afford sprays for cutting plant out some plants in the above-named compost, affording efficient drainage, against a wired wall in a light stove, training the shoots about 6 inches apart. Water sparingly until the roots have taken to the soil, then more copiously. Plants thus grown are of great value.

Poinsettia cuttings recently struck should be potted singly in 4-inch pots. They do well in turfy loam, with a fifth of leaf soil and well-decayed manure and a little sand. Keep them near the glass; and with moderate ventilation until after the potting is recovered from, and with not too much heat, they will make sturdy plants. When fairly established they succeed well in cold pits for the next three months, the temperature being regulated by air-giving, so as to secure their steady progressive growth. Cuttings for successional flowering may yet be inserted, taking off shoots about 4 inches in length with a good heel, and inserting them singly in 3-inch pots or several round the side of larger, and placed in a Cucumber or Melon frame they will strike freely in the full sun, providing they are kept moist. Old plants shaken out and repotted should be kept close to the glass, and with no more heat than is necessary

to keep them gently moving so as to insure sturdy growth.—G. P.

MELONS AND CUCUMBERS.

INQUIRIES relative to these important crops are frequent at this period of the year, and a few seasonable notes on their management may be serviceable to some of your readers.

Melons.—In pits and frames the fruit of the earliest plants is ripening, and should be fully exposed to the sun by raising them on inverted flower pots, placing a piece of slate for the fruit to rest on, or the moisture arising beneath will cause it to decay. Admit air freely, and water only to prevent the foliage flagging. If a second crop is desired encourage about four shoots for each plant from the base of the Vines now bearing, so that when the fruit is cut the old growths may be removed and young shoots substituted. These will show fruit freely upon the first laterals, every alternate lateral being rubbed off to prevent overcrowding. If a top-dressing of fresh compost be given, supplemented with a good supply of moderately weak liquid manure at a temperature of 90°, it will assist the plants to make a vigorous second growth. The weather of late has been all that could be desired to produce Melons of a rich flavour. The days have been bright though the air has been cold, necessitating the employment of fires, especially at night, as it is a great mistake to allow too great a difference between the night and day temperatures. Maintain 70° as the minimum at night, though 65°, or even 60°, will do no harm when the nights are unusually cold and the days bright, 70° to 75° by day being secured artificially, admitting a little air at and above the latter, allowing an advance to 85° or 90°, closing at 80°, but not so early as to raise the temperature above 90°. Keep plenty of moisture in houses containing young growing plants or those swelling the fruit, gently damping the foliage, walls, floors, and closing at about 3.30 P.M., or as early as is safe. Feed plants liberally that have their fruit swelling, not allowing them to suffer through deficient supplies of water, and affording weak liquid manure. Fertilise all pistillate blossoms daily to set the fruit, ensuring a somewhat dry condition of the atmosphere, not using the knife during that period, but pinch out the points of the shoots one or two joints beyond the fruit. Earth-up the plants as soon as the fruit is set and swelling, and examine the plants frequently for the removal of superfluous growths, not allowing them to interfere with the principal foliage. Shade as little as possible, and only to prevent flagging. In pits and frames maintain a good bottom heat by renewing the linings. Make sowings as necessary to meet the requirements of the establishment.

Cucumbers.—Fire heat will still be necessary at night for Cucumbers, the temperature not being allowed to fall below 65° in the morning, and employing it if necessary by day to maintain the temperature at 70° to 75°, allowing an advance to 85° or 90° with sun heat and free ventilation. Continue thinning out the old growths, examining the plants at least once a week for this purpose, stopping, tying, and regulating the growths. Supply weak liquid manure copiously twice a week. Syringe early in the afternoon, and maintain a good moisture all day in bright weather. Shade only in the hottest part of the day, sufficient to prevent the foliage flagging. Cover the roots from time to time with fresh compost. Preserve a good heat in frames and pits by closing the lights early—between 4 and 5 P.M., having previously sprinkled the foliage overhead, and if necessary watered the plants at the roots. Liquid manure in a weak state may be applied occasionally, but be careful not to wet the foliage more than can be helped. Any spare houses may be utilised for growing a late supply of Cucumbers, which succeed either planted out or in pots; and neither bottom or top heat is now necessary, only that obtained by husbanding the sun's heat.—A. G.

TO MAKE AN ELLIPSE ON THE GROUND.

DRAW the diameters A B and C D (fig. 60), then make C F and C G equal to A E. The points F and G are called the foci of an ellipse. Place two pegs in the ground, one at F and the other at G, and then get a piece of string and tie a loop at each end, the length together with the loops being equal to the line A B. Put the loops over the pegs at F and G, and when the string is stretched out it will just reach the extremity A. Place another peg within the string at A, and move it along through C to B, keeping the string equally strained. Half of the ellipse can thus be obtained, and by putting the loops and string on

the other sides of the pegs at F and G, the other half may be traced through D back to A.

In my opinion this is the best method of making an ellipse

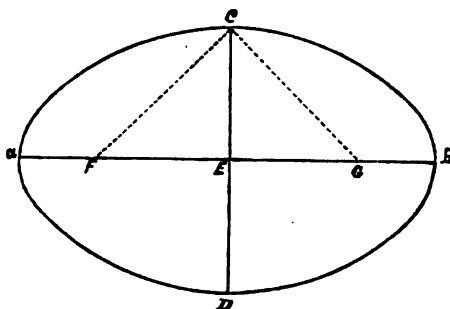


Fig. 60.

on the ground, therefore I think it may be of benefit to some of your readers.—A. R. P.

[Instead of placing the loops over F and G, if the string is placed over the two pegs and the loops drawn together and a peg placed through them, the whole of the ellipse may be described without any further shifting of the peg and string. Another mode of describing an elliptical figure is as follows:—The diameter line A B (fig. 61) is 10 feet in length; divide it into four equal parts. From C and D, with the radius D A or C B, describe circles touching each other in the centre. From C and D, with radius C D, describe arcs cutting each other in E F. Draw the lines E C, E D, F C, and F D, and produce them until they cut the circles in G, H, I, and J. From E and F, with the radius E G or F J, draw arcs uniting G H and I J, which will complete the figure.]

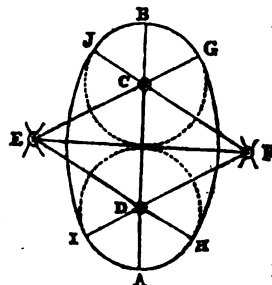


Fig. 61.

GLOXINIAS AT CHELSEA.

IN one of the houses at Messrs. J. Veitch & Sons' nursery there is now a most attractive display of Gloxinias, and a better example could scarcely be seen of their value as decorative plants. The colours are extremely diversified, some shades of purple and crimson being unusually rich and bright; the flowers are very symmetrical, of good substance, and the habit characterising most of the plants is all that can be desired. Vigorous healthy foliage, dwarf habit, richly coloured and finely formed flowers, are the chief recommendations of a good Gloxinia, and these qualities are possessed in a high degree by the plants at Chelsea. The strain is an admirable one, and all who are interested in these beautiful plants should take this opportunity of witnessing what can be done by a system of careful crossing. Gloxinias are essentially plants of easy culture, succeeding with moderate attention if the necessary heat can be provided, and their great attractiveness renders them deserving of extensive cultivation. Most of the varieties there have partly or quite erect flowers, the drooping-flowered forms not being so much esteemed.

Among so many that are good it is difficult to make a selection; but the following are some of the most distinct:—Charmeur, flower very symmetrical, of a rich crimson colour, shading lighter on the margin, throat and tube white, vigorous and compact; Vesta, very bright crimson, dotted in the throat, excellent form; Duchess of Edinburgh, corolla beautifully formed, with a flat regular limb, purplish crimson in colour, with a white throat; Ovid, a very fine variety, deep rich bluish purple corolla, limb with lighter shading, and a light throat; Coquette de Versailles, distinct and delicate, white with a purple shading round the corolla lobes; Duchess of Connaught, a handsome variety, corollas bright crimson with a very clearly defined white margin, the flowers are of excellent form and the distinctness of the margin renders it very attractive; James Barber, large flower of an intensely rich purple colour, dotted in the throat with the same shade. Duchess of Teck is

also a fine purple variety. Niobe has a neat flower shaded with crimson. *Boule de Feu*, *Vesuvius*, and *Rosy Morn* are very brightly-coloured varieties; and many others are equally good, notably a crimson variety, and one with pure white flowers, both unnamed. The above represent but a few of the fifty varieties included in the collection, all of which possess more than ordinary attractions.—C.

MR. G. F. WILSON'S GARDENS.

A HORTICULTURIST so earnest, a lover of plants so ardent, an experimentalist so indefatigable as Mr. Wilson unquestionably is, requires more than one garden for the accommodation of his great collection of plants, and he has three gardens. These are not extensive, neither are they formal and imposing, but they are extremely interesting, and attractive by their almost wild irregularity. Heatherbank, Weybridge, is a familiar address to all readers of gardening periodicals. This residence is charmingly situated, Weybridge having no resemblance to either a town or village. The district is undulated and heavily wooded with Scotch Firs, the dense sombre masses of which, clothing both hill and dale alike, being relieved by graceful and silvery-stemmed Birches and brightened with broad expanses of Golden Furze and Broom. Nestling amidst this rich arboreal vegetation are large villas and small mansions at wide intervals, and those being mostly a compound of the Gothic and Elizabethan styles of architecture the general effect is highly picturesque.

Heatherbank is quite near to the station, and the approach is through a miniature common of Gorse now in full beauty. Entering the grounds, beds of Lilies, as may be expected, first arrest attention. Mr. Wilson is one of the greatest patrons of these flowers, and has them everywhere—in separate beds on the lawn, sheltered by shrubberies; in Rhododendron beds, under Apple trees, in pots in the house, and growing wild in a wood. Had I to give an estimate of the number of bulbs in the three gardens I should say they far exceed fifty thousand. Their growth this year is clean and strong. The bulbs have been amongst the Rhododendrons for years, and there is an increase rather than a decline in their vigour. The beds on the lawn have been prepared with a full knowledge of the requirements of the plants. They are close to the shrubs, in positions where they have shade from the midday sun and are in light soil 2 feet deep. Nothing can be more satisfactory than the plants at the present time. Very few of them have been injured by the frost or east winds, and only the few having a southern exposure have suffered from drought. When these Lily beds are in full bloom the grand masses of *auratum*, *superbum*, *tigrinum* in variety, *elegans*, and many others must be seen to great advantage against the deep background of shrubs. At present the borders are sufficiently gay with Lilacs, double-blossomed Cherries, and Tulips.

On the opposite side of Mr. Wilson's residence, and in front of the small conservatory—(the roof of which is covered with *Tacseania exoniensis*, from which gorgeous flowers hang on slender stems, the plant also affording grateful shade to *Camellias*, a specimen of *C. reticulata* being in excellent health)—is a small flower garden gay with Tulips and Forget-me-nots. The masses of the double white Tulip *La Candeur* and the scarlet *Rex rubrorum* dotted amongst the Forget-me-nots are very striking as viewed in front of the bold shrub-clad rockery or rootery. This has been formed for many years, and contains rare shrubs with Ferns, and a few flowers growing in the most natural manner. Very fine now are the *Trilliums* with their snow-white petals, and *Azalea mollis* is quite at home—one of the finest specimens to be seen in any private garden. *Gaultheria Shallon* grows luxuriantly, and the dense heavily fruited bushes of *Skimmia japonica* and the larger form *S. ovata* are very fine. The Oak and Beech Ferns and Primroses in suitable nooks impart a pleasing feature to the rugged pile.

But the Primroses mentioned are only a shadow of Mr. Wilson's great collection. We find them covering the ground under fruit trees, almost forming an undergrowth to a small orchard, in irregular groups and on cool borders. Many most beautiful forms are here; but most of them, it must be said, are what are usually denominated Polyanthus, the flowers being mostly produced in umbels—but not all, flowers with single and umbellate scapes being often produced by the same plant. Mr. Wilson limits the term Polyanthus to the laced forms; those above alluded to he calls Bunch Primroses. This is at least an intelligible distinction, for the laced Polyanthus

seldom, if ever, produce single-scaped flowers; but the "decorative" Polyanthus and many so-called Primroses merge into each other so closely that the names Primrose and Polyanthus cease to be true distinguishing terms. Mr. Wilson's varieties are extremely rich and varied in colour. Some have been honoured by first-class certificates, notably Scott Wilson, a rich violet plum colour; and Herman Wilson, a beautiful flower with two distinct shades of crimson like an Alpine Auricula. There are many other seedlings of great promise, the result of natural fertilisation, Mr. Wilson's plan being to plant two varieties selected as parents close together and apart from the others, and thus he obtains his varieties. Associated with the Primroses are a vast number of other plants that cannot be particularised, and in another portion of the garden a long range of unheated brick pits for preserving choice and tender plants and raising seedlings, for seed is saved of every plant of rarity, bulbous or otherwise, that produces it, and seedlings are raised by thousands. In a span-roofed house Orchids, which are looking well, are grown in cork baskets, but the material has not been employed long enough by Mr. Wilson to enable him to speak with confidence on its merits. *Disa grandiflora* is growing and flowering freely in the same house, but is a little "drawn," the temperature being fully too high for it. Vines are grown in another division, and Orchids and other plants beneath them, the whole being in good condition.

Passing through the garden of Mr. Wilson's relative, which contains fine Conifers and Rhododendrons and a rich display of *Viola cornuta splendens*, we arrive at the cottage—Gishurst Cottage, from which the famous compound, that retains its position as an insecticide, derives its name. Here is a house in the coolest position at command, but not cool enough, devoted to Lilies in pots, all in excellent condition, and in due time will afford a grand display, all the best forms being cultivated. There is also a large orchard house, one of the first that was erected, and the trees have been in their pots for nearly twenty years. They are remarkably sturdy, and Apricots, Plums, Pears, and Cherries are crowded with fruit, the surfaces of the pots containing a thick dressing of rich manure for supporting the trees. Trained to the roof was flowering a trio of yellow Roses, not often seen blooming together and so well—*Maréchal Niel*, *Isabella Gray*, and *Cloth of Gold*, all affording charming blooms. The house also contained plants innumerable, Vines, and Strawberries. Outside is a square tank, and in it the Wilson raft—a floating island of aquatic plants, the whole being of great weight, but moving to and fro with the slightest ripples of the water, and thus a plain and useful adjunct of the garden is rendered quite attractive. But the feature of the garden is the rockery, and its valuable collection of alpine and other hardy plants. Irregular mounds have been raised, partially under the shade of a few trees, with twisting paths between them. The stones are mostly flat slabs firmly embedded on their edges, and so arranged as to enclose squares and triangular spaces of various sizes and all aspects. Every plant has thus its own little home, and the requirements of each plant being studied they are placed where they thrive best. This rockery is attractive from February onwards, and now contains many plants in full beauty, only a few of which can be enumerated. At the top of one of the mounds, for it does not succeed well lower down, is a remarkable growth of the too rare North American plant *Mitella cordifolia*, like a mass of silvery gauze; on a sunny knoll is *Saxifraga muscoides atropurpurea*, a dense cushion studded with hundreds of its bright red flowers; alpine Phloxes (a number of Mr. Nelson's varieties are sheets of flowers from rosy purple to nearly snow white) have a charming effect; *Omphalodes Lucilla* is growing freely in a rather shaded spot; *Thalictrum anemonoides*, *Delphinium tricornis*, *Papaver alpina*, *Trolliuses*, *Epidemia*, *Hepaticas*, *Veronicas*, and *Gentianas* in variety are quite at home. *Meconopsis nepalensis* and *Wallichiana* have passed the winter safely, and are growing with vigour. *Violas obliqua* and *sempreflorens* are both very pretty, and many other plants are equally attractive. On a cool side border are other Bunch Primroses in fine variety, and a rich mass of *Primula amena*. In a narrow strip, much sheltered, large stones are embedded, their edges rising a foot or so above the ground; and between them Ferns, Lilliums, *Cypripediums*, and many rarities luxuriate. The Canadian Mayflower, *Epigaea repens*, seldom seen in good condition, is growing almost exuberantly, and at one end are two fine examples of *Lilium giganteum* with stems as thick as a man's arm; but one plant is a foot higher than the other, in consequence of being planted in a well-manured spot. Mr. Wilson considers this the only Lily

that is benefited by manure, and he has tried many experiments. Stones inserted and rising above the ground, as in this portion of the garden, prevent the surface of the soil drying; the winds may blow their fiercest and the sun shine his brightest, the surface is always fresh and cool, and hence the plants thrive so well. This is only a cursory notice, affording a general idea of two of Mr. Wilson's gardens, and now another remains to be, necessarily still more briefly, referred to.

Two or three years ago Mr. Wilson purchased an estate—Oakwood—about five miles from Heatherbank, on which he has erected a cottage for the temporary sojourn of himself and his friends during the summer months; and he has formed a garden, and is beautifying a wood with results that will be the very opposite of temporary in character.

On this estate flowers of most hardy bulbs and many herbaceous plants have been planted in the grass in profusion, there to be left and naturalised; indeed the extent of the work in this direction can only be understood by an inspection of it. In a wood of some acres clumps and beds of bulbs or plants have been formed at almost every step, but Lilies predominate. Many thousands of these have been planted in various positions and aspects, and most of them are growing with the greatest freedom, the soil and partial shelter and shade being congenial to this beautiful family of plants. In one place *L. superbum*, the beautiful American Swamp Lily, grew to the height of 10 or 12 feet, as the old stems testify. In a large bed of *L. auratum*, the fern owl, known also as the goat snoker and night jar, made its nest—a circumstance that must be regarded as altogether unique, for there are none of those birds in Japan where these Lilies abound, and hitherto the Lilies have not been so numerous as to form the undergrowth of a wood in this country. It is impossible to enumerate the plants in this wood, but it may be noticed that amongst them is a *Lapageria rosea* now just making fresh growth from near the ground, and which is kept from the slugs by a common lamp glass—a very simple and excellent protector. Some other choice plants on the rockeries have rings of perforated zinc placed round them, which answer the same purpose.

On the south side of this wood—a long and narrow hollow—a good orchard has been planted, and a garden formed. Draining is done with small open ditches, and on the sides of them places have been made and planted with choice varieties of Primroses, that are sure to thrive well. On the opposite side of the garden the ground rises rather abruptly, and is a mass of yellow Broom. Amongst this twisting paths have been formed, and here and there open nooks in which Primroses have been planted in the grass, the varieties being selected with care preparatory to self-fertilisation occurring and further good varieties being raised.

A portion of the garden being rather exposed a very inexpensive and valuable form of shelter is adopted that may be advantageously applied in other gardens having no walls or fences. It consists simply of light "wattles," known in some districts as wattled hurdles, and employed in sheep fencing; they are made of hazels or other sticks intertwined, and answer their purpose admirably. A great length of them are placed on one side of the garden with cross wattles at intervals, thus forming a number of square enclosures that are most useful for raising seedlings and preparing plants of various kinds. These hurdles are also temporarily placed round exposed beds of Lilies or other plants needing a little shelter from cold winds; and their great value is apparent, for in some cases where the whole of the Lilies are not enclosed the growths on the outside have suffered severely, while those inside are fresh and strong. These hurdles are about 4 feet high.—J. W.

NOTES ABOUT EXHIBITING.

My attention has been directed many times at exhibitions to the grouping of several plants in pots or pans, and showing them as an individual specimen. I allude more especially to Orchids; and perhaps one of the most striking instances of recent exhibitions I gather from your report of the late Manchester Show. I wish to thank your reporter for giving us the number of plants each box contained. "In the class for nine specimen Orchids," the first-prize lot evidently contained 108 plants to make up the nine specimens. This I contend is by no means a fair system of exhibiting Orchids, and the boxes alluded to have already undergone a good deal of comment. By this system of exhibiting those who possess the most plants of the different varieties are certain to come to the front, and entirely exclude those who have only individual

specimens or a plant of each variety, although the latter may be equally as well cultivated and as profusely flowered for their size. I do not exhibit, and therefore have no interest in advocating a discontinuance of this unfair grouping system. Can we regard a number of plants packed together a short time previous to the show as examples of superior cultivation, or should the post of honour be accorded to those who show specimens of one plant? I should certainly regard the latter as worthy of more credit than the former.

A long time is required to grow an Orchid into a specimen from a small imported piece, such as is usually sold, with perhaps but one break upon it. If we minutely examine small imported pieces of *Odontoglossum cirrhosum*, *O. Alexandræ*, *O. Hallii*, *O. triumphans*, and many others, the first growth made is found to be considerably smaller than the imported pseudo-bulb, as only the sap stored up in them for nourishment from which it receives its support, at least for a time until the pseudo-bulb is formed or new roots produced. Each year under good cultivation the pseudo-bulb grows stronger, and after four or five years it is strong enough to produce two breaks. The two will in many cases not be quite so strong as the parents from which they have sprung. These under the ordinary system produce one strong pseudo-bulb each, and the following year probably two each, making four, and every alternate year may double the number. So that under good cultivation it will take twelve years with the above mentioned plants (starting with one small break) before a plant is produced containing sixteen breaks. The free-growing *Odontoglossum Roesei* and *O. vexillarium* might probably double themselves in size nearly every year.

I think if this packing system were discontinued more exhibitors would come forward for competition. I do not wish to imply that there are no Orchids shown but what are made up; nor do I say those who practise the system condemned are not good cultivators. If it is fair in exhibiting Orchids to place a number together, why not in showing other plants? What would be thought of the gardener who fastened together two of three bunches of Grapes and showed them to count as one? He would quickly be condemned; and why not stop the practice of combining several plants of Orchids and showing them as one specimen? I would advise those connected with horticultural shows in compiling their schedules to endeavour to guard against this system referred to, and it would prove more satisfactory to all concerned.—WM. BARNES.

NOTES AND GLEANINGS.

We are requested to remind intending exhibitors at the Great Summer Exhibition of the ROYAL HORTICULTURAL SOCIETY, which opens on Tuesday next, the 8th instant, that entries must be sent in this week. We are glad to learn that the Show is likely to be one of considerable magnitude and importance. The entries in the plant classes are very good, and the display of implements, garden appliances, and other objects of a miscellaneous character, is expected to be varied and extensive, many of the exhibits being already in position. Many interesting novelties will be submitted to the Floral Committee, including a collection of new Crotons from the establishment of Messrs. Chantrier Frères, Mortefontaine.

— WELCOME SHOWERS visited the metropolitan district on Monday, Tuesday, and Wednesday last; and although the amount of rain did not greatly exceed half an inch, it will be of great benefit, especially as it was followed by dull weather, preventing rapid evaporation. Bedding-out in the London parks has proceeded slowly, and the plants look anything but happy. The ground, however, being warm will, now that rain has fallen, induce their speedy establishment and free growth. Vegetable crops and fruit trees are similarly benefited by the refreshing showers, but more rain is needed to thoroughly moisten the ground.

— THE CONVERSAZIONE OF THE ROYAL HORTICULTURAL SOCIETY, held in the Gardens at South Kensington on Wednesday evening the 28th ult., was highly successful and unusually brilliant. Numerous attractions were provided, and the weather proving favourable induced a large company of visitors to assemble. In the western arcade the numerous handsome groups of plants from Mr. B. S. Williams, Upper Holloway, The General Horticultural Company, Messrs. Cutbush & Son, Highgate, and Messrs. Veitch & Son, Chelsea, were greatly admired, especially that from the latter firm, which was composed of Japanese Maples and *Gloxinias*, with large clusters of *Anthurium Schertzerianum* that produced a very brilliant effect.

Mr. C. Turner's Roses also constituted a great attraction, the rich colours of the different varieties appearing to excellent advantage under the electric light. In the eastern arcade the members of the Quakett Microscopical Club kindly attended with their microscopes and a number of interesting objects. An excellent selection of vocal and instrumental music was performed in the conservatory, and the garden was brightly illuminated with four of Messrs. Siemens Brothers' large electric lamps, and coloured fires were also judiciously employed at intervals. In the east crush room of the Royal Albert Hall there was an exhibition of statues, &c., showing the effects of "Balmian's Luminous Paint," which attracted considerable attention.

— THE annual Exhibition of the NATIONAL TULIP SOCIETY was held at the Botanical Gardens, Old Trafford, Manchester, on Saturday last, and attracted a considerable number of visitors. In point of numbers the Show compared favourably with those of previous years. The easterly winds which have prevailed during the greater part of the spring season have, however, had a very prejudicial effect upon Tulips, particularly in the northern counties, where the winds and the frosty nights have greatly retarded the development of the flowers. In the midland and southern counties the weather, although unfavourable to healthy growth, has not proved so disastrous. Some very fine specimens of the feathered and flamed varieties which had been reared in Warwick, Derby, and Wolverhampton were exhibited; while, notwithstanding adverse circumstances, some of the local floriculturists were not greatly behind their more favourably located competitors. Among the most successful exhibitors were Mr. S. Barlow of Stakehill, Middleton; Mr. W. Whittaker, Salford; Mr. D. Woolley, Mr. W. Dymock, Mr. J. Turner, Mr. H. Howsley, Stockport; and Mr. David Barber, Derby. Among the winners of prizes for single breeder Tulips were Messrs. Haynes, Barber, Barlow, Mellor, and Whittaker. Best breeder Tulip in the Exhibition—S. Barlow, "Glory of Stakehill." Best feathered Tulip—W. Whittaker, "Majestic." Best flamed Tulip—T. Haynes, "Sir Joseph Paxton."

— WE learn that the BRADFORD HORTICULTURAL SOCIETY will hold their annual Exhibition on August the 20th and 21st, when prizes will be offered in 175 classes, a large proportion of which are devoted to cottagers. The prizes in the chief classes for stove and greenhouse plants are good, and the competition is open to all. Schedules may be obtained from Mr. B. Spencer, 17, Anderson Street, Bradford, Yorkshire.

— A PAPER on the FOOD OF PLANTS, by W. Ivison Macadam, F.C.S., which was read before the Scottish Horticultural Association last year, has been printed in a pamphlet form at the request of the Society. It contains a large number of careful and original analyses of the most important manures employed in the cultivation of gardens and farms. Many matters of considerable importance are treated of and elucidated, and will thus prove a valuable guide to the composition of the principal fertilisers in commerce.

— WE have received several renderings of the old prophetic doggerell relative to the leafing of the OAK AND ASH, which it would serve no useful purpose to publish. There are several varieties of these trees, some early and others late in leafing. We know of one Ash tree that for forty years has been the last tree to unfold its leaves in a parish of 5000 acres, and the majority of Oaks always produce leaves before the Ash trees.

— IN a stove at Westwood House, West Hill, Sydenham, the residence of Henry Littleton, Esq., we recently noticed an exceptionally beautiful variety of ANTHURIUM SCHERTZERIANUM. The plant is of moderate size, but it has two dozen of the most handsome spathes fully expanded that we have seen. They average about 6 inches in length, and $\frac{1}{2}$ to 5 inches in breadth, of great substance, even, elliptical in form, and extremely rich in colour. Mr. Churchfield, the experienced gardener in charge, is very fortunate in having obtained so distinct a form, which we learn was originally received in a consignment of plants from one of the London nurserymen.

— ON several previous occasions we have referred to the fine collection of ORCHIDS AT THE FIRS, SYDENHAM, the residence of C. Dorman, Esq.; but perhaps they could be scarcely seen in better condition than at present. The numerous specimens of *Odontoglossum vexillarium* are especially beautiful, over one hundred spikes, bearing four to six large flowers being open; one fine piece has about twenty-four hand-

some blooms. Some of these are 5 inches long by 4 in width, the colour also being very good. *Cattleyas* are in excellent condition, the flowers being of great size, and some of the varieties unusually fine, *C. Mossiae* and *C. Mendelli* having blooms of extraordinary merit. *Dendrobium tortile*, *D. infundibulum*, *D. Devonianum*, and *D. Falconeri*, all especially handsome, are admirably represented. Many other species of *Oncidium*, *Cypripedium*, and *Masdevallias* are flowering freely, and produce a beautiful display, all the plants indicating the excellent effects of Mr. Coningsby's skilful culture.

— AMONG many other noteworthy plants now flowering in Mr. W. Bull's nursery at Chelsea is a magnificent display of *ODONTOGLOSSUM VEXILLARIUM* and *EPIDENDRUM VITELLINUM MAJUS*. These form two large banks on each side of the path in one of the houses, and it is scarcely possible to imagine a more beautiful collection. The *Odontoglossums* are particularly fine in size of flowers, and some of the varieties are deeply coloured. The vigour of the plants indicates the careful attention they receive, and when arranged in the large group at the Regent's Park Show on the 19th ult. they attracted the admiration of all the visitors.

— IN the same nursery the rare but pretty *LILIUM POLYPHYLLUM* is bearing its neat fragrant flowers, the perianth divisions being recurved, spotted, and streaked with purple on a whitish ground. The plant is neat in habit, about 2 feet high, with whorls of narrow leaves. The flowers are somewhat in the way of *L. Scovitzianum*.

— IN the Melbourne Nurseries at Anerley, now one of the General Horticultural Company's establishments, *GLOXINIAS* are in very fine condition, one long house being entirely filled with plants in 48-size pots. The varieties are of great merit, the flowers being freely produced, large, of good form, diversely and richly coloured. Like all the plants under Mr. Baues's management, their appearance is extremely satisfactory. *Dracenas*, too, are seldom seen in better health, the colours being very clearly and richly developed.

— MR. GEORGE DUFFIELD, Winchmore Hill, N., states that he never remembers the ROSES looking so sadly at this time of the year, or so full of Rose maggots, caterpillars, and aphides. He has also been sorry to notice the number of hibernated hornets and queen wasps, which threaten the small promise of the fruit crop this season.

— MR. IGGULDEN finds PIONEER (Laxton's) STRAWBERRY an excellent variety, following closely on Keens' Seedling. It is of very vigorous habit, and the whole crop swells off to a good size. The fruit travels well. Our correspondent also finds that *La Grosse Sucrée* does well in pots, forming a good succession to the Pioneer.

— THE usefulness of TUBEROUS BEGONIAS FOR HANGING BASKETS has been previously referred to. Mr. Childs of Garbrand Hall, in preparing Begonias for this purpose, associates with them plants of *Saxifraga sarmentosa*. A Begonia tuber is placed in the centre of a pot of a suitable size for the basket, and three plants of the Saxifrage equidistant near the margin. The graceful drooping character of the latter plant and its silvery foliage affords an agreeable contrast with the Begonia, and imparts a pleasing finish to the basket. The plants are grown in pots, and placed in baskets as they are required or as is found convenient by the cultivator.

— THE third annual report of the SCOTTISH HORTICULTURAL ASSOCIATION, which we have received, is a very satisfactory one, the balance in hand being greater than last year, and the members of the Association more numerous. The Association is engaged in a very practical manner in advancing practical and scientific horticulture, and the report shows that business is transacted with efficiency and economy. During the session of 1880-1881 the Association has decided to offer prizes of £5 to members of the Association for the best and £2 10s. for the second best essay on "The History of Horticultural Buildings," special reference being made to the development of designing, heating, ventilating, and arrangement, with illustrations. Prizes are also offered for competition by under gardeners for the best three herbaria of British plants, with notes pertaining to them; also for the three best collections of "Insects injurious to plant life," with short descriptive notes. Mr. Malcolm Dunn, Dalkeith Palace Gardens is President, and Mr. Alexander Milne, Leith Park Nursery, remains Secretary of the Association.

— THAT beautiful plant *VIBURNUM PLICATUM* is seldom seen in better condition than they have it now in the tempe-

rate house at Kew. Several specimens in large pots are bearing numerous globular heads of pure white flowers that being closely arranged on the branches form a wreath of trusses, which contrast admirably with the bright shining green foliage. For conservatory decoration this species deserves to be much more generally grown than it is at present, specimens in 10 or 12-inch pots being very ornamental when in flower. A soil composed of good turfy loam and a little sand suit it excellently, and being of easy culture it certainly deserves the attention of all who have to maintain a varied display of flowering plants.

— We cite the following from an American contemporary relative to PRESERVING FLOWERS AND FRUIT:—"Fruit and flowers may be preserved from decay and fading by immersing them in a solution of gum arabic and water two or three times, waiting a sufficient time between each immersion to allow the gum to dry. This process covers the surfaces of the fruit with a thin coating of the gum, which is entirely impervious to the air, and thus prevents the decay of the fruit or the withering of the flower. Roses thus preserved have all the beauty of freshly plucked ones, though they have been separated from the parent stem for many months. To insure success in experiments of this kind it should be borne in mind that the whole surface must be completely covered, for if the air only gets entrance at a pin-hole the labour will all be lost. In preserving specimens of fruit particular care should be taken to cover the stem, end and all, with the gum. A good way is to wind a thread of silk about the stem, and then sink it slowly in the solution, which should not be so strong as to leave a particle of the gum undissolved. The gum is so perfectly transparent that you can with difficulty detect its presence, except by the touch."

— PARAFFIN AND ROSES.—The way I use it is this. I pour over a quarter of an ounce of tobacco a little boiling water, strain this into a bottle containing one gill of water and half a teaspoonful of paraffin, and apply with spray-producer. I give the Roses a good wetting with it at night. It is not necessary to syringe it off the plants. It will not injure them if it does drop into the pots. I cannot say if it will kill the caterpillar; but for green fly it is as good as any insecticide that has come under my notice.—WM. SMITH, *Sunderland*.

— HELLEBORE TEA v. CATERPILLARS.—I am desirous to know the proportion of hellebore powder which "BAYARD" uses for the purpose of destroying the Gooseberry caterpillars as described by him in your Journal of April 22nd, page 317.—WILLIAM HASLAM.

NOTES AROUND MANCHESTER.—No. 1.

DURING a recent short visit to the great centre of the cotton trade I availed myself of the brief time at my disposal, and called upon a few of those gentlemen in the immediate neighbourhood who have either distinguished themselves as ardent florists or as having made "hobbies" of particular classes of plants. The gardens were all of moderate extent, not boasting great ranges of plant and fruit houses, but in each there was a speciality. Certain plants received a large proportion of care and attention both from the proprietor and his gardener, and in consequence these favoured *protégés* were thriving excellently. Wherever plants are well grown there is something to be learned, and possibly therefore the following notes upon what chiefly attracted my attention may convey a hint to some readers of the Journal.

STAKEHILL HOUSE.

Among the comparatively few florists at the present time that have gained celebrity at the metropolitan and provincial exhibitions devoted to the encouragement of florists' flowers, one of the best known and most successful is the proprietor of the above establishment, S. Barlow, Esq., the energetic Honorary Secretary of the National Tulip Society. This gentleman has for many years given great attention to the culture and improvement of the most popular florists' flowers, such as Tulips, Auriculas, Polyanthus, and many others, and the success that has attended his efforts is well known to all readers of the horticultural periodicals. The garden is situated some three or four miles north of Middleton (the nearest station going from Manchester), and is somewhat elevated, being on one of the lower slopes of a hill that rises a short distance north of the garden. This hill very effectually shelters the place from the north winds, but there is no protection from the east winds, which come charged with noxious vapours from

the numerous factory chimneys in the neighbourhood. The soil, too, is of a cold tenacious character, extremely unfavourable to the growth of most plants; and it will thus be seen that Mr. Barlow has had considerable disadvantages to contend with, a fact which reflects additional credit upon his cultural skill.

The great feature at Stakehill is the grand collection of Tulips. These were the principal object of my visit, and as it was the latter part of May I had hoped to witness the finest display of those brilliant and interesting flowers that can be found. However, I was doubly disappointed. In the first place, the cordial proprietor himself was unfortunately confined to his bed, and I was thus deprived of his society; and secondly, Mr. Barlow tells me that the first week in June is usually the time when his Tulips are in their best condition. So I had to be satisfied with observing the method of culture pursued, admiring the vigorous health of the plants, and hoping that I should on another occasion have an opportunity to visit Stakehill a little later in the season. Some idea of the collection may be gained from the fact that over eight thousand flowering bulbs are grown every year, together with at least twelve thousand "half bulbs," "non-bloomers," and offsets, the varieties represented being about 230. All these were in beds nearly 4 feet in width and 20 yards long, from which the original soil had been removed to the depth of 2 feet. A drainage of rough material was then placed in, and over this the compost, that chiefly consists of excellent mellow fibrous turf, of which there is a large quantity stored-up in one of the sheds. The soil is raised 6 to 8 inches above the level, being supported with boards of the same width placed round the edges. In these beds the bulbs are planted about 7 inches apart every way, the lines being taken across the beds. The position is moderately sheltered on all sides, some of the beds being afforded special protection by means of hoops, over which a light covering is placed at night and in unfavourable weather. One has a permanent framework with one side boarded up and the upper part glazed, and in this bed a few flowers were showing colour, but they were not much in advance of those that had been hooped over. The regularity with which the varieties of different heights had been arranged was excellent, and when the flowers are all fully expanded the effect must be such as would not be readily forgotten.

In other similar beds were numbers of Ranunculuses, Anemones, and many other choice herbaceous plants, which are also great favourites with Mr. Barlow. The Auriculas and Polyanthus were past their best, but sufficient remained to indicate the admirable selection of varieties grown. That beautiful Polyanthus named Sunrise, for which a first-class certificate was awarded at the National Auricula Society's Southern Show this year, was, however, still bearing its bright flowers, while the old and rare Cox's Prince Regent had several neat trusses of its exquisitely formed blooms. But what chiefly attracted my attention after the Tulips were some enormous specimens of Hellebores about a yard in diameter in pots. One of these plants was extremely attractive last Christmas with over seventy large blooms fully expanded at once. From his entire collection, which includes a large number of species and varieties both continental and English, Mr. Barlow obtained more than five thousand blooms during the season. The large specimens were all seedlings, obtained in various gardens and grown on during the past fifteen years. The value of Christmas Roses for decorative purposes could certainly not be better exemplified than at Stakehill, and the plants being liberally treated prove a welcome succession to the Chrysanthemums, of which a good selection is cultivated.

Many other plants are grown that need not be particularised, but the healthy appearance that characterises them all is highly creditable to the care they receive from Mr. Barlow's intelligent gardener, Mr. Pomroy, who is himself a florist of considerable experience.—L. CASTLE.

TOWN GARDENING.—You frequently give us descriptions of fine country gardens and greenhouses which often make the town gentlemen dissatisfied, but they need not despair. I will give them a few notes of two gardens situated at Bradford, Yorkshire, one of the coldest, blackest, and most foggy towns in England. There are several gentlemen here who take a great interest in the cultivation of flowers and fruit, especially F. W. Anderton, Esq., and F. Priestman, Esq. The gardens of Mr. Anderton are situated on the east side of a steep hill. The soil is heavy and cold, and not half a mile above the gas-

works, which might be considered the worst possible place for fruit and plant growing; nevertheless, the conservatory has been gay with flowers all the winter. Azaleas have been very fine, the collection including many of the best and newest varieties. There is also a good collection of Camellias, which have flowered well during the past winter. Poinsettias, Acacias, Chorozeamas, and Adiantums grow freely, and specimen Eucharas and Zonal Pelargoniums have been in fine condition, with a host of such plants as Cinerarias, Begonias, and Calceolarias. Grapes, Melons, Peaches, Cucumbers, &c., are all well grown. Mr. Priestman is also a great lover of flowers and Ferns; the fernery is large with a tastefully built rockery. The Ferns are judiciously planted and growing well. In the other houses are to be found good collection of healthy plants, Vines, Peaches, &c., but as the place is being remade it will take some time before it is at its best. Enough is seen in these two places to show that fruit and flowers can be grown on the top of a hill amongst soot, smoke, and all other disadvantages that we find in large manufacturing towns.—JAMISON.

WARNER'S KING APPLE.

YOUR correspondent "B." says on page 317 that this cannot be an old Apple, but I am inclined to think it is not so new as your correspondent imagines, and for the following reasons:—I have found the Apple in almost every fruit-growing district, and usually under different names. Although in Kent I cannot

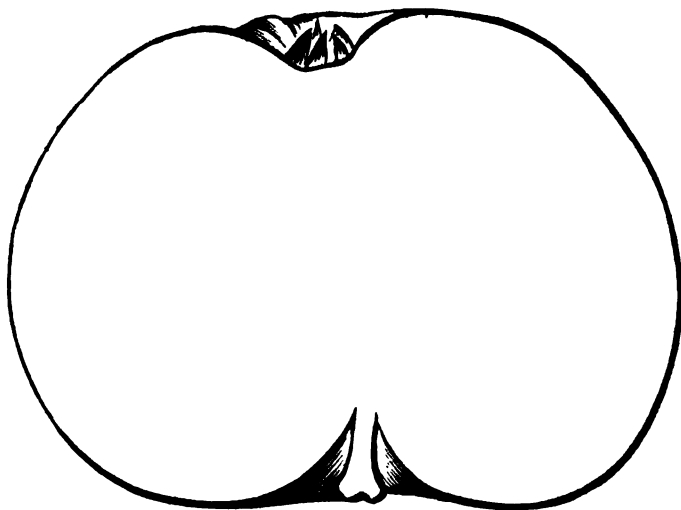


Fig. 62.—Warner's King Apple.

trace it under the name of Warner's King for many years, I am certain from my own examination it has been grown for nearly fifty years with a local name. In Middlesex I have seen it under the name of Salopian. I am growing it myself also as Nelson's Glory and D. T. Fish. One of our leading nurserymen imported a "new" Apple from Scotland, which acquired a great reputation three or four years since at the Crystal Palace on account of its size and appearance, but it proved to be Warner's King. Therefore I think we may fairly conclude that Mr. Warner's King was the "king" of many other people beside himself; but Mr. Warner, recognising true royalty, linked his fortunes to those of the rising monarch. I have no doubt that in many parts of England it may be found under other names besides those I have mentioned.

The following description, condensed from Dr. Hogg's "Fruit Manual," may enable others to compare some local variety that they are proud of with Warner's King:—"Fruit very large, 4 inches wide, 3½ inches high, ovate. Skin of a uniform clear deep yellow, strewed with russet dots and patches of pale brown russet. Eye small and closed, with long acuminate segments, and set in a narrow, deep, and slightly angular basin. Stalk about half an inch, deeply inserted in a round funnel-shaped cavity." The growth of the tree and the long very dark green leaf would also assist in the detection of the variety.

I think this description would allow any grower of this Apple, even if it were under an assumed name, to detect it, with the exception of the "clear deep yellow." At the time of

gathering it is usually green, and therefore the absence of colour might deceive an inexperienced grower. I do not know of its equal (with the exception of the Loddington Seedling) for grafting purposes, and strongly recommend any growers who have trees that are failing in bearing qualities to graft with Warner's King. It has a very upright mode of growth, and therefore in overcrowded orchards instead of grubbing the superfluous trees graft them with this variety, and in a few years the others would probably then receive the same fate. I had intended to have referred to the other varieties mentioned by "B.," but must defer my observations on them. I will conclude by asking if any of your readers can tell me the origin of Grenadier or Lord Derby?—LEWIS A. KILLICK.

ORCHIDS AT ARNOT HILL, NOTTINGHAM,

THE RESIDENCE OF C. G. HILL, Esq.

IT is not often my lot to have the gratification of witnessing so superb a collection of Orchids as I saw on the 25th of May. Mr. Hill's gardens are not extensive. It is only three years since the estate was purchased by the present proprietor, and during that period the grounds have undergone an entire change, and have been brought into their present satisfactory condition. A new carriage drive has been formed between banks of shrubs, choice shrubs planted in other suitable places, a new Orchid range erected, also a range of small span houses, and the old range entirely remodelled. The pleasure grounds contain graceful walks, fine sweeps of grass without being cut up into innumerable flower beds, and shrubberies tastefully arranged and planted. The choice Conifers, Cupressus Lawsoniana aurea, Retinospora plumosa aurea, Thuja elegantissima, and many others equally ornamental, are very fine. One fact is worthy of note, that while so many common shrubs, such as Laurels both common and Portugal, Laurustinus, Berberises, &c., have suffered severely during the past winter, the fine Conifers referred to have stood uninjured.

Near the pleasure grounds is the great feature of Arnot Hill—viz., the Orchid range; it is 146 feet long, divided into six compartments, with a corridor 7 feet wide at the back. (The ground plan of this fine range is represented in fig. 64.) The corridor forms a very agreeable promenade, from which the visitor can enter all the houses without passing out of doors. The idea is an excellent one, and I believe originated with Mr. Hill. The corridor (Nos. 8 and 9 on the ground plan) is 47 feet long by 7 wide; it is heated with two rows of 4-inch pipes, and divided into two compartments. One division was entirely occupied with Gloxinias, all in excellent health; the other contained a collection of

imported Orchids. Amongst these I noticed some fine pieces of *Lælia anceps*; *L. anceps alba*, a very fine and beautiful Orchid. It is described by Professor Reichenbach as "a new and chaste beauty." *Maedevallia bella* was just going out of bloom; the flowers measured 10 inches from tip to tip of the sepals. In the house No. 7 of the range I found a choice collection of stove plants, Palms, Phalanxopes, and various Orchids in suspended baskets. The Crotons were large and healthy, and included most of the leading species and varieties. A *Cocos Weddelliana* was 7 feet high, and the *Dracenas*, *Caladiums*, and *Abutilons* were equally fine. The stove fernery had similar arrangement of heating apparatus and stages—namely, four rows of pipes under the outer stages and two rows under the centre stage. There I noticed a fine *Davallia Mooreana*, 8 feet in diameter, in robust health. *Adiantum farleyense* was represented by a noble specimen, as were *A. cardiophyllum*, *A. concinnum latum*, *A. gracillimum*, *Stenochloena scandens* 5 feet in diameter, *Davallia bullata*, and many others all very luxuriant.

In the centre of the range is the conservatory (No. 5) also approached from the corridor. It is 45 feet by 25, 16 feet high at the ridge, and 9 at the eaves. It is heated with four rows of pipes on each side, and ventilated at the ridge with Messrs. Foster & Pearson's usual lantern ventilation. There is a bed in the centre on which stood large plants, and a bench all round for smaller specimens. There were the usual greenhouse plants in bloom, besides some fine *Amaryllises*, *Begonias*, and specimens of *Francisceca Hopeana*, the latter filling the house with their delicious fragrance. In prominent positions

were noble examples of *Musa Cavendishii*, *Cycas revoluta*, *Dicksonia antarctica*, and a collection of Japanese Maples, *Acer polymorphum* and its varieties, with their graceful foliage. Trained to the roof was a plant of *Lapageria rosea* and its beautiful companion *L. alba*; the latter had been in flower since last July, and at one time had 280 expanded blooms.

In corridor No. 1, which is 54 feet long and 7 wide, was a grand display of Orchids all in full bloom (see fig. 63). This is kept as a show house; the plants as they expand their flowers are

brought into this corridor, where their beauty can be seen to advantage. To relieve the brilliancy of the Orchids a few *Amaryllises* had been introduced, each scape bearing five and six flowers. It would be impossible to enumerate all the beautiful Orchids that were in bloom; I can only note a few of the best:—*Odontoglossums* were well represented; *O. radiatum* had six spikes of bloom, and twelve flowers to each spike; *O. crispum*, with one spike containing fourteen flowers; a fine variety of *O. Pescatorei* with its delicate flowers; *O. vexil-*



Fig. 63.—ORCHIDS AT ARNOT HILL.

larium, most chaste; *O. cirrhosum*; *O. Andersonianum*, very rare, in fine condition; *O. citrosomum*, very delicate; *O. triumphans*; *O. maculatum*; *O. Cervantesii*, one of the prettiest of all the *Odontoglossa*; *O. Hallii*, with a spike 4 feet long; *Masdevallia Estradae*; *M. Harryana*, *M. Harryana* (Bull's blood), very rich; *M. Veitchiana*; *M. Lindeni*; *Oncidium concolor*, with its bright primrose flowers; *O. leucochilum*, with a spike

of flowers 6 feet long, very neat and beautiful; *Cypripedium Lawrenceanum*, *C. barbatum*, *C. Pearcei*, *C. Sedeni*; *Cattleya Mossiae superbum*—this plant contained fifteen flowers 8 inches across. There were a great many others in bloom of equal merit. The display of Orchids was quite magnificent.

The East India house is 18 feet long by 18 wide. Of plants in bloom I may mention *Dendrobium Freemani*; *Odonto-*

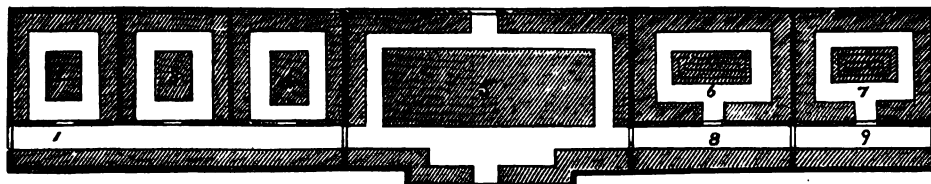


Fig. 64.—GROUND PLAN OF ORCHID RANGE.

No. 1.—Corridor with Orchids in flower (see fig. 63).
No. 2.—Mexican house.
No. 3.—*Cattleya* house.

No. 4.—East Indian house.
No. 5.—Conservatory.
No. 6.—Stove fernery.

No. 7.—Stove containing *Crotons*, &c.
No. 8.—Part of corridor, imported Orchids.
No. 9.— " " *Gloxinias*.

glossum Roeslii album, pure white, with orange yellow centre; *Vanda suavis*, with two good spikes, twelve and thirteen flowers to each spike; *Aërides Fieldingi*; *A. Lobbii*; *Oncidium ampliatum majus*, with four large spikes 4 feet long. Besides those in bloom may be mentioned good plants of *Dendrobium Griffithianum*; *Dendrochilum filiforme*, with fifty or sixty spikes; *Angraecum sesquipedale*, a large specimen; a batch of young plants of *Calanthe Veitchii* and *C. vestita*. The next division is the *Cattleya* house. It contains numerous fine

examples of the class of plants to which it is devoted. In the Mexican house were many fine plants. One *Cœlogyne cristata* was 3 feet through; *Oncidium incurvum* with seven spikes, a noble plant; and others all bright with health and beauty. This unique range of glass was erected by Messrs. Foster and Pearson of Beeston; the workmanship is of the best order, and the convenience and accommodation is all that can be wished for. Mr. W. German, the skilful head gardener, speaks of the simplicity of the ventilation and the superior finish of

the various details in the most flattering terms; and Mr. Hill, the owner, is equally well pleased with the structures.

In addition to the above there is a lean-to range, which is 124 feet long, and divided into four compartments. The first house is intended for stove flowering plants, though not yet fully furnished. The second house is a vinery that has been planted nearly two years, and contains plants of Muscat Hamburgh, Black Hamburgh, Muscat of Alexandria, and Madresfield Court. The Vines were supplied from the Chilwell Nurseries in a growing state, about 5 feet high. Each Vine is carrying about six bunches of good size. Mr. German is not only a skilful Orchid-grower, but also understands the art of producing fine Grapes. The third house in the range contains Azaleas, many of them trained as pyramids. The last house is a late vinery, and consisted of Black Alicante, Lady Downe's, and Muscats. These were quite as promising as those in the first house. Parallel with the last-named is a new span-roofed range. This is 127 feet long by 11 feet wide, and divided into five compartments. The first and second divisions were occupied with Melons and small plants, and the other three with cool Orchids. The whole of these three ranges of glass are heated with an 8-foot Trentham boiler with water-way end. There are 5000 feet of piping attached to the boiler, and the labour of heating each house is said by Mr. German to be reduced to a minimum.—VISITOR.

EFFECTS OF THE LATE WINTER.

It may seem late to be writing in the middle of May concerning the effects of the late winter, but it is really only now that the fatal results can be fully determined. At least this is the case in gardens like mine, where herbaceous plants are beginning to play an important part.

I appear to be always most unlucky in the years that I commence any new pursuit. When I tried farming we had a summer here so dry that scarcely any grass grew, and I had a most disastrous year, and now the very year I commenced growing herbaceous plants we have had so severe a winter that my losses are terrible. It may not, however, be entirely the fault of the winter that so many plants have died; it may, and no doubt is, on account of the small weak plants which most nurserymen send out. It is a most extraordinary circumstance, but none the less true, that the majority of nurserymen who cultivate herbaceous plants appear to wish that the plants they send out should die. At least on no other grounds can I understand the weak nature of the plants they send. A Rose nurseryman prides himself on providing strong, vigorous, robust plants which will be a credit to him; the herbaceous plant-grower seems to try how small and weak a nursing he can provide. This really is a great grievance, and I now find that the only plants I can depend upon to live are those which I get from an amateur grower who disposes of his surplus stock. In speaking, therefore, of the late winter, I think it only fair to mention that my plants were not strongly established, but for the most part those bought last year.

I had a very large collection of Pyrethrums, upwards of one hundred varieties; indeed I do not think there was a single variety in commerce which I did not buy. Every one of these has died. My Delphiniums have suffered fearfully. I purchased what I was told the finest collection in England, and most of these have died, and all my Pentstemons also. A friend of mine tells me that he despairs of growing Pentstemons even in Devon; he has grown them for years, and has lost them every winter. A genus of plants I am particularly partial to has also suffered immensely—viz., the Aquilegias.

Iris germanica and I. Kempferi have done very badly with me. I had a very complete collection, and if I continue cultivating them I shall have to purchase nearly all the varieties next autumn.

Potentillas have stood the winter well. I do not think any thing would kill them, and so have the herbaceous Phloxes. The miscellaneous alpine and herbaceous plants have suffered very much indeed. Aubrietias, Polemoniums, Adonis, Senecio pulcher with a number of others succumbed.

As your readers may remember, I have discussed in your columns the advisability of leaving Gladioli bulbs in the ground through the winter. I determined to give the plan a trial, but fortunately only tried a limited quantity—about one hundred bulbs; only two of these have survived the winter, and they are next to worthless. My friend Mr. Boscawen strongly recommends me to leave them out of doors, as he finds them do well with him in Cornwall; but there must be a great difference

between his climate and ours, or they would not do well. The English and Spanish bulbous Iris have done very well, but Iris iberica, I. Histrio, and other choice and tender bulbous varieties have died. I have tried in vain to grow Iris Histrio.

Tea and Noisette Roses have not suffered nearly as much as I expected. Some few have died, but the majority are growing and appear to be making good growth, but I have now only a very small quantity. The season so far has been favourable to Roses in this district. The long winter and cold dry spring have retarded their growth, and the cold nights in May have not done the mischief they generally do.

In this part of the country there has been little if any fruit blossom, so that I am afraid we shall have another bad year for fruit, but in the neighbourhood of London I noticed trees literally covered with blossom. Altogether, I think I must conclude that the general effects of the winter have been most disastrous both to horticulture and fruit-growing.—WYLD SAVAGE.

PORTRAITS OF NEW AND NOTABLE PLANTS.

ARISEMA GRIFFITHII.—"This is by far the finest species of the genus as yet known. It was discovered by Griffith in Bhotan at elevations of 3000 to 5000 feet, and named after its discoverer by Schott, who, however, failed to recognise it amongst the species subsequently brought by Sir Joseph Hooker from Sikkim, and transmitted to him for examination, and he consequently gave to the latter the name of *A. Hookerianum*. A comparison with Griffith's Bhotan specimen does not show any difference between them, though the latter appears to affect a much higher elevation. It flowered at Preston House in May, 1879."—(*Bot. Mag.*, t. 6491.)

RIBES LACUSTRE.—"The Swamp Gooseberry of the United States of America inhabits cold wet situations, especially the banks of mountain rivers across the whole continent, from the Arctic Circle in Canada to Sitka and British Columbia, and from New England to Northern California, retaining its habits and characters in more northern situations and throughout the Eastern States, but becoming less bristly and more spiny in California, where, too, the leaves are pubescent. Though unattractive in point of inflorescence, its beautiful green delicate foliage and the purplish brown branches render it a desirable shrub for cultivation. The fruit, which is always small, seems to vary in quality. Asa Gray describes it as 'unpleasant' in New England; Lindley (under *R. echinatum*) says on Douglas's authority, 'berries black, pleasant'; Sereno Watson describes the fruit of the Californian variety as 'acid, intermediate between a Gooseberry and a Currant'; the colour of the berry, too, is variously described as dark brown, red, amber, and purplish black. Though introduced so long ago as 1812, according to Loudon, the Swamp Gooseberry has never till now been well figured. A fine specimen flowers annually in Kew in the month of June."—(*Ibid.*, t. 6492.)

PRIMULA SIBIRICA var. **KASHMIRIANA.**—"The Siberian Primrose has a very wide range of geographical distribution, from Lapland and Sweden across the continents of Europe and Asia to Dahuria, and it reappears in Arctic America; its southern limit, however, is Kashmir, from whence seeds were sent to the Royal Gardens by Dr. Aitchison, which flowered in June of last year."—(*Ibid.*, t. 6493.)

ONCIDIUM DASYSTYLE.—"A very elegant plant, a native of the Organ mountains in Brazil, whence it was imported by Messrs. B. F. Williams of the Paradise Nurseries. Its near allies are the *O. citrinum* (Tab. 4454), *O. bifolium* (Tab. 1491), and *O. flexuosum* (Tab. 2203), all of which differ in the form of the labellum, its crests, and in other conspicuous characters. In its lateral sepals being united only below their middle, it forms a transition between Lindley's two great sections of *Tetrapetala* and *Pentapetala*."—(*Ibid.*, t. 6494.)

TILLANDSIA MALZINEI.—"It was discovered about the year 1870 in the neighbourhood of Cordovo in Mexico by the Belgian gentleman after whom it is named, M. Omer de Malzine, and was first flowered in cultivation by M. Jacob Makoy of Liège in 1872. The excellent figure in the "Belgique Horticole" above cited represents a variety with red bracts. In the plant which flowered at Kew in April, 1879, the bracts were yellow."—(*Ibid.*, t. 6495.)

BOUQUETS AT THE MANCHESTER SHOW.—In your account of the above Show you omitted to mention that I received an extra prize for a collection of bouquets which were greatly

admired. These bouquets with the fruit appear to have been removed when your reporter visited the Show, which would account for the absence of them from his report.—J. JONES, *The Nurseries, Cotton Hill, Shrewsbury.*

NOTES ON VILLA AND SUBURBAN GARDENING.

KITCHEN GARDEN.

Potatoes.—The severe frosts have much injured the growth of these, and now in most districts the long-continued drought has affected them, especially where no manure has been used. Where sufficient rain has not fallen it is advisable to thoroughly water the rows of early varieties before they are earthed up. This will also admit of planting Brussels Sprouts and other winter greens between the widely distant rows; these plants cannot well be established too early, and are besides spoiling in the seed beds or where pricked out.

Peas.—If late Peas are in request a sowing should be made in heavily manured and deeply dug soil, or better still in trenches. Suitable medium-height varieties are Premier and Omega, and the best tall varieties are Ne Plus Ultra and British Queen. The advancing crops, especially the earliest, will be much benefited by liberal supplies of liquid manure, or by watering-in some kind of artificial fertiliser. Pinching out the points of the growths when the first blooms are set will cause the pods to fill quicker.

Runner and Kidney Beans.—The former delight in a rich soil, and during very dry weather will fail unless they receive abundance of moisture at the roots. Both kinds may be transplanted readily, which admits of the rows being made up where required.

Strawberries.—The present season has so far been very unfavourable to this crop, the earliest and strongest blooms having twice been blackened by frost, and in most districts the plants are much too dry at the roots. Where this is the case a good soaking of soft water should be given, followed if possible, and also after rain, by a liberal quantity of liquid manure. If not already done, surround the plants with clean litter for the fruit to rest on.

GREENHOUSES AND VINERIES.

When emptied of bedding plants the temperature of vineries and greenhouses may with advantage be raised principally or entirely with the aid of enclosed solar heat. If the house is closed, say at about 4 P.M., on a sunny day, and the walls, floor, and plants syringed with tepid water, the result will be a warm genial temperature, which will last throughout the night. On dull days the houses may be closed somewhat earlier, and if cold a little fire heat might be given, especially to the vineries. This increased temperature will have a very stimulating effect on Grapes, Tomatoes, Peaches, and other fruits, and Cucumbers; also Gloxinias, Calceolarias, Coleuses, Dracenas, Achimenes, Begonias, Plumbagos, Fuchsias, Palms, Ferns, and other heat-loving plants. Those plants being grown for decoration during the winter months are also benefited by the early maturation of the growth.

Caladiums.—These fine-foliated plants when well grown are extremely handsome. They will not attain perfection in a cool house, and unless they receive liberal treatment are not particularly striking even when grown in heat. They are coarse-rooted, heat and moisture-loving plants, and must be treated accordingly. The corms are generally started in small pots according to their size, and as a rule one good shift is found sufficient. Well-drained pots are used, varying in size from the 6-inch to the 10-inch pots. The greater the number of crowns of the strong-growing varieties the larger the pots must be. Suitable soil consists of two parts of turfy loam and one of peat (both in a rough state), one part of well-decomposed manure, with a liberal addition of charcoal and sand. It is not absolutely necessary to use peat. The plants should be shaded from bright sunshine, and when well established they require abundance of water varied with liquid manure.

Torenia.—The two rather new species—T. Bailloni, flowers yellow, with brownish red throat; and T. Fournieri, sky blue, deep blue spots, and yellow throat—are beautiful and easily grown greenhouse plants. The latter is more attractive, more robust, and less trailing in habit than the former. The seed if sown in light soil and very slightly covered with sand germinates freely in heat. It is not too late to sow for a late batch. When the seedlings are large enough prick them off either singly in thumb pots, or three or more plants in a 8-inch pot, using light loamy soil, and return them to the frame. When growing freely pinch them back to the second joint, and the side shoots that follow to one joint, giving the final shift when breaking afresh, using soil in a rougher and richer state than before. T. Fournieri is sometimes grown in pans similar to those used for Achimenes. About five plants are required for each pan. Pots, however, answer quite as well. This variety is inclined to be trailing, but if three plants are grown in either 6-inch or 8-inch pots and pinched back twice neat globular heads will be formed, which are to be preferred. T. Bailloni when first grown was treated as a stove plant, but did not flower freely till placed in a cool house. It did not succeed so well planted in a mixed border as did T. Fournieri.

Mignonne.—Fine specimen plants of these, either pyramidal or standard-trained, can with a little trouble be grown for winter

work. The seed should be sown at once thinly in thumb pots, using firm loamy soil. Place the pots in a cold frame, and thin out the seedlings when large enough, leaving three plants in each pot for pyramids and one for a standard. Shade from bright sunshine only, but avoid drawing up the plants. The large pyramidal-flowering is suitable, but Miles' Spiral will be found superior to it.

Pelargoniums not in flower should be examined for aphides, and if they be present fumigate at once. Plants that are flowering may be afforded weak liquid manure, and plants stopped some time back for later flowering should also have liquid manure, but not too strong, or it may induce too much foliage at the expense of flower. Shift Chrysanthemums into their large pots, employing good turfy loam with a sixth of decayed manure and a sprinkling of bone dust. The drainage should be good, placing a few large crocks at the bottom, and over these some crushed bones if procurable, or, failing them, some smaller crocks. Pot rather firmly.

As soon as Cinerarias for winter flowering are large enough pot them off singly, and after the plants are established in gentle heat grow them on in cold frames. Similar remarks apply to Primulas for autumn flowering. Tuberooses should be brought into flower as required by placing them in heat, and more should be potted for late flowering. At the time of potting the soil should be moist and the pots be plunged in a hotbed, at the same time keeping the tops cool so as to facilitate root-action before top growth, and when the pots are filled with roots the plants may be removed to a warmer house, affording them plenty of water and keeping them near to the glass. Encourage Balsams by liberal treatment; the early-sown plants should have liquid manure, syringing to keep down green aphides and red spider. Keep Cockscombs as near the glass as possible, and well supplied with water and liquid manure after the "combs" appear. Globe Amaranthuses require to be kept a little drier and cooler than Cockscombs. Plants of *Richardia ethiops* that have flowered may have the suckers taken off, potted in 4 or 5-inch pots, encouraged to make growth for a few weeks, and then be planted in rich soil in rows outdoors, where they will become stronger than if kept in pots.

WORK FOR THE WEEK.

HARDY FRUIT GARDEN.

THE leading shoots of Apricot trees should now be tied or nailed-in where they are required for filling up vacant spaces, and the forerights or side shoots pinched back to three or four leaves to induce the early formation of spurs and insure the thorough ripening of the wood. The trees being well furnished with young healthy wood, any projecting unsightly spurs may be removed, this being better done now than during the season of rest. Destroy all the grubs folded up in the foliage by picking them off or squeezing them between the thumb and finger. Complete the disbanding of Peaches and Nectarines, and secure the young shoots either by tying or nailing, leaving plenty of space in the ligature for the swelling of the wood. The trees are generally clean and healthy, but a sharp look-out should be kept for aphides, syringing with tobacco water upon its first appearance, and following with a good washing from the garden engine a day or two afterwards. Cherries on walls may be treated similarly to Apricots. Morellos should have as much young wood laid in as there is room for, removing the forerights, and stopping the side shoots not required for laying-in at the third or fourth leaf. The forerights of Plums should be similarly stopped, and any elongated spurs may also be cut back as advised for Apricots, the side shoots being stopped at the third or fourth joint, extension shoots required for furnishing the trees to be trained-in their full length.

Recently transplanted trees should be watered during dry weather and well mulched, the weather being very trying for such trees recently. Where established trees of Apples and Pears have been headed down and regrafted during the present spring the scions will probably be growing vigorously; the clay may then be removed and the ligatures slackened, supporting the scions in some way to prevent their breaking off by their own weight or the force of the wind.

Strawberries so soon as the fruit is set should have a heavy watering if the weather be dry—with liquid manure if it be available, the mulching will then keep the roots cool and moist during the swelling of the fruit. The fruit should be thinned if large specimens are required, leaving a few of the best on each truss, and to secure the well and even colouring and high quality tie the trusses to small sticks to expose the fruit to sun and air. Keep a sharp look-out for caterpillars on Gooseberry and Currant bushes, and dust well with hellebore powder upon their first appearance. Cuckoos have kept our bushes free of these pests so far this season and for many years past. Black Currants are falling off in many places to a lamentable extent; ours never promised a more abundant crop. The branches are well thinned out annually, and the fruit borne by the young growths is large and fine.

FRUIT HOUSES.

Vines.—Late Grapes should be thinned immediately they are large enough, the berries swelling so rapidly at this season that they

soon become too large to be thinned properly and expeditiously; besides, when the work is too long deferred the size of the fruit is impaired. The laterals must not be allowed to extend so as to interfere with the principal foliage. The growth may be allowed to extend when there is space to admit of its full exposure to light, but not otherwise, overcrowding and overcropping being the cause of more failures than any other error of culture. Remove all superfluous, badly placed, deformed, or small bunches. Crop lightly, which means size, quality, and high finish; bulk meaning small fruit, bad colour, poor quality, non-keeping, and shanking. Water thoroughly when necessary, one good soaking is worth many dribbles. Crops swelling off will be benefited by applications of liquid manure or a little guano sprinkled over the border previously to watering, and mulching with short manure after a good watering will encourage surface roots. Vines from which the Grapes have been cut should be syringed occasionally, so as to keep the foliage clean and healthy and promote the ripening of the wood. When the Grapes are ripe moderate moisture should be maintained for the health of the Vines, and accompanied by free ventilation it will not injuriously affect the Grapes; keep the lateral growths closely stopped. Where Grapes are giving a constant and liberal supply of air must be secured, or they will not colour well or be perfect in flavour. Muscats and Lady Downe's completing the stoning process should have air abundantly, as if the weather be bright they are liable to be scalded. Maintain a moist sweet atmosphere in all houses swelling off the fruit; and although fires cannot be dispensed with, much may be done by closing early on fine afternoons with plenty of moisture in economising fuel. Stop Vines in pots when about 8 feet long, and pinch the laterals and sub-laterals at one joint as produced. This applies to Vines intended for fruiting next season; those intended for planting may be allowed to make all the lateral growths they can, or be less closely pinched and be cut back to two or three eyes at planting time.

Figs.—Continue former directions with respect of trees ripening their fruit until the crop is perfected, after which it will be necessary to produce a more genial condition of the atmosphere to accelerate the second crop. The border should be well mulched, watering it thoroughly. Attend to stopping, tying, and regulating the growths, not allowing the latter to become overcrowded, as full exposure to light and air is essential to their maturity. The thinning of the second crop of Figs must have attention, as too heavy a crop is not only exhausting to the tree, but the fruit is inferior in size and quality. Trees in pots which were forced early should, as soon as the first crop is ripened, be syringed twice a day, top-dressing with fresh manure, and the necessary waterings through the mulchings will carry support to the roots. If the trees be weakly remove the second crop of fruit entirely, continuing the trees in the house until the wood is well ripened, when they may be plunged in ashes outdoors in a warm sunny situation, watering as necessary, and syringing occasionally in dry hot weather. Attend to later-started crops in tying the shoots, stopping and thinning them where too thickly placed; and when the fruit begins to ripen afford the same treatment as advised for the early forced Figs—i.e., gradually diminishing the supply of water to the roots and atmosphere, with a circulation of dry warm air constantly, until the fruit is gathered.

PLANT HOUSES.

Stove.—Cuttings may still be inserted of such winter-flowering plants as the blue *Eranthemum pulchellum*, *Aphelandra cristata*, *A. aurantiaca* Boezlii, which do well in 4 to 6-inch pots in a compost of peat and loam. *Plumbago coccinea* *superba* is very bright in colour; cuttings an inch in length with a heel strike freely in gentle heat, and make good flowering plants in 6-inch pots. *Centropogon* and *Thysacanthus rutilans* strike freely from the young growths, as also do *Hebeclinium ianthinum*, *Centradenia rosea*, and *C. floribunda*. When rooted they should be potted off and grown on near the glass where they have all the light possible, shifting them into larger pots as required, 6 or 7-inch pots being large enough for most decorative purposes. Encourage *Luculia gratissima* with root room as required and an intermediate temperature. If there is a suitable position to turn the plant out in a border, and a back wall not too much shaded to train it to, it will afford very satisfactory results in the way of flowers for cutting. *Clerodendron Balfourianum* is grown mostly in pots trained to trellises for decorative or exhibition purposes, but planted out and trained to wires beneath the rafters of the stove it gives a wealth of flowers for cutting. *Bougainvillea glabra* in a pot is very useful, but a plant or two planted out and trained beneath the roof affords grand sprays of its high-coloured bracts when grown in plenty of light, and in quantity quite remarkable, over a lengthened time—indeed, for half the year. *Allamanda nobilis*, *A. Cheloni*, &c., planted out and trained to the roof wires afford abundance of grand trusses of flowers for cutting, and continuously over a long period, the plants being supplied with liquid manure after commencing to flower. *Dipladenia Brearleyana* is simply magnificent treated similarly, and *Rondeletia speciosa* major gives an immense quantity of its orange terminal trusses over an extended period, which are very fine for cutting. We strongly recommend these for planting out where cut flowers in variety are

in demand, along with *Stephanotis*. Gardenias are also best planted out, *G. florida* *intermedia* being the best, having blooms 4 inches across and very sweet; and *Ixora acuminata* gives its fragrant white heads of bloom almost continuously under similar treatment. *Franciscea calycina* major is a fine winter-flowering plant with large purple flowers, and, though of no use for cutting, it is a fine decorative plant. *Gesnera zebрина*, *G. splendens*, *G. cinnabarina*, and *G. exoniensis* are very useful winter-flowering plants, the colour of the flowers being bright and the foliage ornamental. They should be encouraged to make sturdy growth by affording them positions near the glass. Single plants in 6-inch pots are very effective for decorative purposes, and half a dozen in an 8 or 9-inch pot produce a fine effect. They do well in peat and loam with a little leaf soil and sand, giving liquid manure when the plants are in free growth. There is yet plenty of time to obtain flowering plants of *Begonias* in 6 or 8-inch pots, by inserting cuttings at once of such kinds as *insignis*, *Moonlight*, *fuchsoides*, *Saundersi*, *Digswellensis*, *hybrida multiflora*, *Weltonensis*, &c., growing them on in plenty of light and not too warm. *Streptocarpus biflorus* raised from seed sown now, the seedlings potted off as soon as ready and kept growing through the autumn and winter, are useful for margins of stages, and its delicate-coloured flowers are chaste for cutting.

Orchids.—Great care will be required so as not to allow a current of cold air to come in contact with the young shoots of growing plants; the ventilation should be so arranged that the air can pass over the hot-water pipes. The leaves being now succulent, over-moisture must be guarded against by having the foliage dry at least once a day. If any plants show indications of disease examine the roots, cutting away any diseased portions, applying a little quicklime, and keeping them a little drier than usual for a few days. *Phalenopsis* when grown in pots or baskets should not have much moss, as the roots delight to cling to the pots and external surfaces, and by damping frequently the roots will grow more rapidly and with less risk of decaying than in a mass of wet moss. *Angusticum bilobum* grows and flowers freely when subjected to the same treatment as *Phalenopsis*. *Calanthe vestita*, *C. Veitchii*, *C. Turneri*, and *Limatodes rosea* that have filled their pots with roots will be benefited by a shift into a larger size, employing leaf soil and old well-decayed manure; or if it is not convenient to shift them, afford weak liquid manure at every alternate watering, syringing freely morning and evening, and shade only from hot sun. *Dendrochilum filiforme* now throwing up the flower spikes requires a good supply of water. Afford plenty of air to *Epidendrum*, and as much light as possible. *Lælia cinnabarina* should be top-dressed or repotted as may be necessary before the plant starts into growth, using rough peat and plenty of drainage; it does best at the cool end of the Cattleya house. *Dendrobium speciosum*, *Lælia albidula*, *L. acuminata* and var. *rosea*, *L. autumnalis*, *L. furfuracea*, and *L. majalis* succeed better in a greenhouse during the summer months than in the Mexican house with plants that require shade.

TRADE CATALOGUES RECEIVED.

William Bull, King's Road, Chelsea.—*Catalogue of New Plants*.
John Laing & Co., Forest Hill, S.E.—*General Catalogue of Plants*.

Osborn & Sons, Fulham.—*Catalogue of Hardy Plants*.

TO CORRESPONDENTS.

* * All correspondence should be directed either to "The Editors" or to "The Publisher." Letters addressed to Mr. Johnson or Dr. Hogg often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense. Correspondents should not mix up on the same sheet questions relating to Gardening and those on Poultry and Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

ROSE PESTS (E. M.).—The half-dozen words of description of grub No. 1 are quite insufficient to enable us to determine its name. No. 2 is no doubt the larva of the Rose Tortrix, *T. Bergmanniana*, and No. 3 is *Tetigonia spumaria*.

VINES SCORCHED (J. E.).—Your last conjecture is no doubt the right one—namely, the sun shining with much power on the Vine when the foliage has been moist by the evaporation from the tank. Sharp currents of air would also induce the rusty appearance of the young wood.

ERADICATING RUSHES (R. A. J.).—The first essential is to drain the land thoroughly, then as the rushes appear mow them off closely and frequently, and dress the land with lime. If this practice is properly carried out the rushes will be fewer and weaker yearly, and will eventually disappear. The paper you name has ceased to exist, and the only means of recovering your money is by an action in the County Court. We state the remedy, but neither advise you to adopt it nor dissuade you from doing so. You must determine the matter for yourself.

SENSITIVE PLANTS (Yorkshire).—They require a light position in a warm house or frame having a night temperature of not less than 60° with a pro-

portionate rise during the day. They require also a moist genial atmosphere, and should not, in their small state especially, be exposed to strong currents of air. A compost consisting of two-thirds of light turfy loam, the remaining third of peat, leaf soil, or decayed manure, will be suitable. They require copious supplies of water, therefore the pots should be well drained to prevent the soil turning sour. In potting care must be exercised not to injure the roots, and it is very advisable not to touch the leaves frequently when the plants are small, or they will not grow freely.

RHODODENDRONS NOT FLOWERING (A. B.).—The continued rains of last summer and consequent absence of sun prevented the maturation of the growth, and the severe winter also injured the buds, hence many Rhododendrons are not flowering freely this year. The weather that has lately prevailed has been very favourable to the setting of the buds, and in all probability your shrubs will flower well next year without any special assistance. We are unable to account for the changed condition of your Roses; but no flowers emit perfume so well when the atmosphere is very dry, as it has been of late, as during moist genial weather. Your plants will probably recover their lost property.

LATE GRAPES (Subscriber).—The varieties you name if grown on steadily will not be too early for late use, as the better they are ripened the better they keep. You cannot do better than follow the instructions given from time to time in our "Work for the Week." A night temperature of about 65°, falling to 60° in the morning, will be suitable. Ventilate very early in the morning in advance of the increasing temperature, and close early in the afternoon to lessen the need of fire heat. Late Grapes require to be thinned more freely than the early varieties, as if the bunches are crowded the berries are liable to become mouldy in the winter. When the Grapes are ripe the bunches should be quite thin, so that the air can circulate through them; the Grapes will then, with otherwise good management, hang for a long period.

DESTRUCTING THRIPS (W. Roberts).—There are no better modes of destroying them than by fumigation and the frequent application of insecticides. Tobacco smoke will kill the insects but not their eggs; and further, as soon as the house is being filled with smoke, a number of the insects fall to the ground and bury themselves in the soil, from which they emerge the next day. Fumigation should be conducted therefore during two consecutive evenings and at fortnightly intervals. Soft soap or Gishurst compound and tobacco water will kill thrips; 3 or 3 oz. of either the former dissolved in a gallon of water and half a pint of tobacco liquid added. This applied at a temperature of 120° will kill every insect it touches. By persistent application of these remedies your houses may be cleared; and if you then keep the plants in a healthy vigorous state and maintain a moist genial atmosphere you will not be much troubled with the pest.

CULTURE OF BRASSIA VERBEOUSA (J. Pearson).—This Orchid is of easy culture, but it will not succeed in a greenhouse with Fuchsias and Pelargoniums, as it requires a higher temperature and closer atmosphere. A stove where a temperature of not less than 60° or 65° is maintained during the summer, nor less than 55° during the winter, would suit it if abundant moisture be supplied while the plants are growing. It thrives in a compost of light fibrous loam, peat, sand, and sphagnum well incorporated, the pots being thoroughly drained. The plants flower during May and June, producing spikes from the side of the pseudo-bulbs. *Cypripedium* insignis succeeds in the same compost, and flowers during the winter months. *Justicia carnea* is a useful plant for decorative purposes when well grown. It succeeds in a temperature intermediate between a stove and a greenhouse, which is also suitable for the *Cypripedium*.

CAMELLIA TREATMENT (W. D.).—The plants, now that they are making fresh growth, should be well supplied with water, never allowing them to become dry; in fact, if the drainage is good the supply can hardly be too liberal, but care must be taken that the soil do not become sodden by frequent heavy needless waterings, otherwise the roots will decay, the foliage become yellow, and the flower buds fall in winter. It is well to preserve a moist atmosphere and to syringe the plants twice daily. Afford shade from bright sun, as the sun falling powerfully on the leaves whilst wet causes them to rot. After the flower buds are set the plant should be kept cool, and when growth is complete moisture should be discontinued.

ASPARAGUS CULTURE (Imprimatur).—The following extract from our small manual "Kitchen Gardening," which can be had post free for 4d., will answer your inquiries. "There are five conditions essential for obtaining an abundance of fine Asparagus. 1. Beds well drained. 2. Abundance of rich dung in the autumn. 3. Weekly sprinklings of salt and strong liquid manure during the whole period of growth. 4. Leaving off cutting by the middle of June. 5. Not cutting down the seed-stems until they are quite yellow. *Making the Bed.*—This is best done at the end of March or early in April, this being the best time also for planting. If the ground is common loam, and well drained, or having a subsoil of gravel or chalk, nothing more is needed than to trench the space intended for the bed, and to mix with the soil as much rich thoroughly decayed dung as can be worked in. *Planting.*—Have only two rows of plants in each bed, as this enables them to be cultivated and cut from easily. Set the rows out 2 feet apart, stretching the line, and drawing with a hoe a drill on each side of it, sufficiently deep for the roots to be extended on each side of the little ridge which is thus left between the two drills, and on which ridge the plants are placed. Their roots being equally divided on each side, nothing more is required than filling up the drills with a hoe or rake. The plants should be chosen when they have started into growth 2 or 3 inches; they should be forked out carefully, and their roots not allowed to get dry after being taken up. No heads should be cut the first year after planting, and very few the second. *Summer-dressing the Beds.*—When the beds have come into production do not continue cutting after the end of June. Keep a thoroughly open surface. Apply slight dressings of salt, and if a little guano and charred dust can be given alternately, the vigorous growth of the Asparagus will be increased. No one would think of applying salt, guano, or liquid manure in hot parching weather. Advantage should, at all times, be taken of applying them at the commencement of rain, that they may be immediately washed in. If the manures are sprinkled on the surface of the soil when dry, this should at once be well scarified, and then thoroughly soaked with water."

TEA ROSES (Tyro).—If you are really a tyro in Rose culture you must not expect to make a fortune in a year or two by growing Tea Roses for sale. To the experienced their culture is easy, but tyros have frequently to purchase success by a few failures and some consequent disappointment. You would do well to visit some of the establishments where plants and flowers are

grown for market, and you would gather more useful information than you can possibly derive from reading alone. Your plan appears to be good. The back wall will answer admirably for such varieties as *Maréchal Niel*, *Gloire de Dijon*, and *Climbing Devonensis*; and you might also train four plants up the rafters after the manner of Vines, but they must not be permitted to cover the roof so as to unduly shade the plants beneath. The front lights should be kept clear. Like most tyros you appear to have a disposition to err in desiring to grow too many varieties. The best yellow Rose for button-holes is *Isabella Sprunt*, closely followed by *Madame Faloot*. The best white Tea Rose for market is *Niphetos*. *Devonensis* is always welcome, and the *Nolaette Lamarque* and the free-flowering *Mrs. Bosanquet* are suitable for your requirements. You had better grow the varieties named in quantity, increasing those that answer your purpose the best, and reduce the others accordingly.

THE CUCKOO-SPIT INSECT INFESTING PLANTS (S. R.).—The insect you refer to as being so prevalent this season in the neighbourhood of London is the *Tettigonia spumaria* of some entomologists, and the *Cercopis*, *Cicada*, or *Apophorosa spumaria* of others; it is known as the Froth insect, Cuckoo-spit, Froth-hopper, or Frog-hopper. Its larva enveloped in its froth is prevalent upon the shoots of the White Thorn or Quick; but it also infests the stems of Pinks, Carnations, Lilacs, and many other plants. If the froth be removed once and sometimes two small, pale green, aphid-like insects are detected. These are the larva or young of the froth fly. By means of its sharp rostrum or beak it extracts the sap of the plant, and voids it as an excrement in the frothy form, which is its characteristic. About the end of July it sheds its skin, leaving it in the froth, and comes forth the perfect insect. About the beginning of August the males and females may be found in pairs numerous on the plants they frequent. They are of a dirty white colour, thickly dotted, and clothed with short hairs. The legs are six in number, short, but two hind legs longest, and formed for leaping. So effectual are they for the purpose that, as Mr. Kirby states, after showing their mode of leaping, they will spring 5 or 6 feet at a time, being more than 250 times their own length, or "as if a man of ordinary height should be able to vault through the air to the distance of a quarter of a mile." It is not ascertained where the eggs of this insect are deposited, but probably on the stems of the plants on the shoots of which the larva feeds. It appears, however, that they can travel after hatching, for seedlings and plants raised from root-cuttings are often affected. We know of no better plan for destroying the insect than drawing the affected shoots between the fingers, and then dipping these into a bowl of water after each grasp. In the case of Carnation stems and other flowers requiring more tender treatment all the froth may be taken from the insect by means of a piece of sponge, and itself then removed by a camel-hair-brush.

CARNATION UNHEALTHY (C. D.).—If all the leaves are like the one you have sent your plant is in a very unsatisfactory state, and you cannot expect it to produce fine flowers. The root-action is defective, but from what cause we have no means of knowing. The soil may be exhausted; or it may have been kept too wet, causing the roots to decay; or too dry, causing them to shrivel. First see that the drainage of the soil is efficient, then remove an inch or two of the surface soil and apply fresh compost of turfy loam and manure to induce active roots. If the pot is full of roots clear root water given two or three times a week would benefit the plant. There is no mildew on the leaf sent, but there are signs that it has been affected at some time or other. Dusting with sulphur will destroy the parasite.

TUMEROUS BIGNONIAS (Idem).—As the plants in the small pots are no doubt root-bound they should be shifted into 5-inch pots at once. Drain the pots well, and employ a compost of turfy loam, peat, and leaf soil, or old decayed manure in equal parts, with a liberal admixture of sand. Take care that the soil in the small pots is not dry, neither must it be very wet at the time of potting. Do not fill the pots quite full of soil, a space half an inch deep should be left for holding water. Pot rather firmly without making the soil quite hard, and place the plants in a warm moist position in your greenhouse where they can be shaded from the sun for a few days until they have recovered from the slight check given in potting.

PRESERVING CUT FLOWERS (J. H. S.).—To preserve flowers in a room for any length of time all those with numerous petals require gumming. This is effected by the London florists in the following manner:—A very clear gum is employed, and a few drops are placed in the centre of the flower round the base of the petals, a small can similar in form to engineers' oil cans being used for the purpose. Careful attention must also be paid to daily changing the water in the vessels containing the flowers, and each time these are taken out a small piece should be cut off the stalk with a sharp knife. This allows the water to readily ascend the sap vessels and supply the loss occasioned by rapid evaporation in a dry room.

APPLES NOT SETTING (Young Gardener).—Many fruit trees that were covered with blossom this spring will have little or no fruit, a circumstance that we attribute to the very dry weather causing the petals of the flowers to fall prematurely. The caterpillars to which you allude are also injurious. They are probably those of the figure of 8 moth (*Episcema curuleocephala*) which appears in October, and should be destroyed whenever observed. You may probably destroy the caterpillars by dredging the trees with hellebore powder, which will not be difficult in the case of cordons and espaliers. Linnaeus denominated this insect as the pest of Pomona, and the destroyer of the blossoms of the Apple, Pear, and Cherry.

INSECTS IN CUCUMBER BED (A Regular Subscriber).—In order to get the best information on the subject we submitted the insects to a skilled entomologist, and the following is his reply:—"Had your correspondent adopted the common precaution of enclosing such small insects in a quill, or tried some similar plan, instead of putting them in a box with lumps of earth to knock them about, he would have saved himself both trouble and annoyance. Evidently the specimens sent are *Acaridae*, though I am not positive that these are the cause of the mischief described. But Bolander has noted a species he calls *Tetranychus cucumeris* which infests the fruit of the Cucumber in some seasons, and it is possible that in the early stage this is a subterranean feeder. It has been proved that some of the mites do thus change their mode of life in advancing from the egg to the perfect condition."—J. R. S. O.

NAMES OF PLANTS (W. H. Myers).—1, *Sphecomorpha* insufficient; 2, *Veronica spicata*; 3, *V. gentianoides*; 4, *Scilla nutans*; 5, *Allium Moly*; 6, *Palmaria officinalis*; 7, *Geranium dissectum*; 8, *Polemonium carolinum*; 9, *Alchemilla argentea*. (E. H. H. S.)—*Lactuca spinulosa*, a native of Great Britain. (R. B.)—1, *Cypripedium barbatum*; 2, *C. nigrum*; 3, *Dendrobium swainsonianum*; 4, *Dendrobium filiforme*; 5, *Odontoglossum vexillarium*.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

THE COMPARATIVE VALUE OF FEEDING STUFFS.

In continuation of our subject we wish to observe that by using concentrated food we can shorten the period of fattening stock from twenty-four weeks to sixteen weeks; and the saving of roots alone—valuing Swedes at 6d. per cwt., and the quantity consumed in fifty-six days at 56 cwt.—would be 28s., or taking the cost of the animal's food altogether at 8s. per week, a very moderate estimate, the total amount in the eight weeks would be £8 4s. It will take at least 1 cwt. of Swedes to do as much good as 6 lbs. of cake, even if consumed under the most favourable circumstances; but if given as extra food it fills the animal with a large amount of cold water. Thus we can see that by using concentrated food the saving is very striking, whilst the value of the manure would be nearly doubled. It is a serious mistake to feed an animal almost entirely on roots, as they contain nearly 90 per cent. of water.

Many experiments have been made with the view of ascertaining the amount of food required to produce a certain quantity of fat; but although nothing like definite results has been obtained, it has, however, been shown that 160 lbs. of Swedes given in the open air produced 1 lb. of mutton, the same result being produced respectively by 100 lbs. of Swedes given under cover of a shed, 12 lbs. of good clover hay, 8 lbs. of beans, 5 lbs. of peas, or 4 lbs. of linseed cake, and 4½ lbs. of cake and peas or beans combined. Experiments have also shown that it is impossible to fatten any animal on linseed cake, or profitably on dry food alone as a rule. Mr. Lawes tried to do so, and the results were decidedly unfavourable, even when combined with chaff. All experiments, however, point to the fact that a mixture of linseed cake and peas or beans have produced the most profitable results. In some instances barley and oats have produced greater results than beans, but that depended upon the condition of the animal, beans and cake containing something like double the quantity of nitrogen or albumen, the flesh-making properties of food, as compared with barley or oats; therefore, when an animal was in an advanced stage of fatness food containing a less proportion of albumen would suffice.

We have been often told that there was nothing like barley for feeding purposes, and that animals did well upon it; but, on the other hand, the same farmers have complained of certain losses. Barley contains 68 per cent. of starch, &c., including less than 1 per cent. of oil and 12 per cent. of albuminous matter. There is no material difference in the chemical constituents of beans and peas, but beans are more heating than peas. Beans contain 48 or 49 per cent. of carbon, including 2 per cent. of fat, whereas barley contains 68 per cent. of carbon. Barley contains from 10 to 11 per cent. of albumen; beans and peas from 28 to 24 per cent. respectively; thus beans far surpassed barley in flesh-making properties. Oats contain 68 per cent. of starch and sugar, and 12 per cent. of albumen. From these analyses the home farmer can understand why people are content to pay a higher price for beans than for oats. In calculating the value of different kinds of food we reckon the oily matter they contain at 2s. per lb., and the albumen at 1½d. per lb. Mr. Lawes has valued the oil rather higher; but proceeding on this basis the value of linseed cake will be 10s. per cwt., linseed 12s., beans a little over 9s., and wheat, oats, and barley at about 8s., and we find that oats can generally be purchased at from 10 to 12 per cent. less money per ton than beans.

We will next compare these articles with linseed cake. Linseed itself contains 7½ per cent. of water, 84 of oil, and nearly 81 of starch, whilst linseed cake contains 12 per cent. of water and between 11 and 12 per cent. of oil (25 per cent. being pressed out of the seed in the manufacture of oil), 27 per cent. of starchy matters, and nearly 28 per cent. of albumen, being 5 more than linseed; hence linseed cake is often found of greater value for feeding purposes than linseed itself, although some people fancy otherwise. Linseed contains a greater amount of oil than is

required for warmth, and cake surpasses it in the amount of albumen; in fact, the superiority of linseed cake over linseed is shown by the series of experiments tried by the Duke of Bedford at Woburn. The point which we wish to impress upon the mind of the home farmer is, that in using concentrated nitrogenous food, such as linseed or other cake or pulse, these substances contain a far greater amount of flesh-producing properties than wheat, barley, or oats, and they are consequently not only better adapted for young and growing animals by supplying more freely the flesh and bone-making materials, but they also enrich the manure to at least double the extent. In support of this we find a table prepared by Mr. Lawes, showing the manuring value of 1 ton of each of the following substances:—Decorticated cotton cake, £8 10s.; rape cake, £4 18s.; linseed cake, £4 12s.; malt dust, £4 5s.; lentils, £3 17s.; linseed, £3 18s.; tares, £3 18s. 6d.; beans, ditto; peas, £3 2s. 6d.; locust beans, £1 2s. 6d.; oats, £1 14s. 6d.; wheat, £1 18s. 6d.; Indian corn, £1 11s. 6d.; malt, ditto; barley, £1 9s. 6d.; clover hay, £2 5s.; meadow hay, £1 10s.; oat straw, 18s. 6d.; wheat ditto, 12s. 6d.; barley ditto, 10s. 6d.; mangold, 6s.; Swedes, 4s. 8d.; turnips, 4s. We would further observe that as linseed cake is the healthiest, most palatable, and nutritious concentrated food that can be given to animals for fattening purposes, its character must be due to its composition; and as it contains 27 per cent. of flesh-making materials and 11 per cent. of oil, it therefore cannot be wise to resort to the opposite extreme, and give wholly in its stead as food such as barley, which is almost entirely devoid of oil, and contains less than one-half the albuminous matters. If the argument of cheapness is relied on we must observe that the cheapest of all foods as regards its price and component parts is rape cake, and next to this is cotton seed cake, and if the former can be objected to as being bitter in taste, the latter at any rate is sweet. We do not, however, view the bitter flavour in rape cake with so much objection as many do, for we find that by mixing about 10 per cent. of locust bean meal with it the stock, especially young and breeding animals, do not dislike it while they thrive well upon it.

As regards the flavouring of food for cattle we have numerous kinds offered to our notice by the different manufacturers and vendors, but we think locust beans may be used for the purpose with great benefit. This condiment is often used in admixture with cake, but it is so very sweet that the boys who help to look after the cattle are apt to eat a considerable quantity. It contains 50 per cent. of sugar, and may be used for mixing with the food for cattle at the rate of 5 per cent., but not more, and also give all cattle access to rock salt. At one time it was held that fat could only be derived from fat—that is, oil; but it had in these days been proved to be an error, for pigs were brought to the utmost extent of fatness by feeding them with barley meal, which contained but little if any oil at all. Animals have, however, no power to produce anything unless the raw material of the same is supplied in food. It is only by carrying out with care and judgment the principles involved in the feeding of animals that we can expect to dispose of the many kinds of food at our command to the best advantage, and thereby to develop the resources of agriculture and increase the profits of farming. With regard to the value of cakes and other foods offered for sale to the home farmer, they can only be tested by analysis. Some may say they could not do that, but there is no difficulty if farmers were members of the Royal Agricultural Society, as their chemist (Dr. Voelcker) would easily ascertain of what the food they were supplied with was really composed, the charges for which analysis are now much reduced, and any noblemen or gentlemen would, of course, feel an interest in their agents becoming members of the above Society, and enjoy its privileges in this and various other ways. With regard to the value of hay as a feeding material it differs widely, for we know that some pasture hay alone will fatten a bullock of heavy weight, yet that grown upon poor soil would hardly keep animals in store condition unassisted with other food. Before concluding our subject we cannot refrain from remarking upon the wasteful practice adopted in some of the eastern counties, where farmers give their fattening cattle as much as 10 or 12 lbs. of oilcake daily. In our practice, however, we have proved this to be an excessive quantity, which no animal can assimilate or turn to profit. We have found that less than half that quantity, with 2 lbs. of bean meal with a moderate quantity of roots, and straw only, the only practice whereby the animals can be made to pay for feeding, irrespective of the manure left behind. In conclusion, after having said so much in relation to the different feeding stuffs, and as we hope to return to the subject on a future occasion, we can only say that the full advantage of their use, even in the best of mixtures, with moderate quantities of roots, straw only should be used as fodder, and the best of all being rye straw. Hay cannot generally be made a profitable food compared with the grass being used as fodder in the summer months, whereby all risk and expenses of stacking are saved, and both meat and manure doubled in value and produce.

WORK ON THE HOME FARM.

Horse Labour.—In a few days in the early districts of the kingdom the clovers will be ready for mowing by machine. This will

engage several of the strongest and best-conditioned horses, for it is always severe work, and the animals should be used in relays so that the work may be continued for something like harvest hours, and one set of horses should not be used for more than four or five consecutive hours. A large number of horses will, however, be still engaged in cultivating and cleaning the land for root crops. This is the best time to drill Swede seed for the main crop. About 2½ lbs. of seed per acre is sufficient if the seed is good and can be depended on as new and sure to grow. There is, however, no better way to insure this than for the home farmer to grow his own seed, taking care as soon as the Swedes are full grown to select the best grown and transplant them at about 2 feet apart each way in the month of November or December. Set them in the ground deep enough to bury the rootstock entirely, leaving only the heart or centre of the leaves above ground, as they will then endure much frost without injury if carefully planted. A cultivated orchard is a good place to grow Swedes and turnip seed, and nothing answers better for cultivation under trees, for they shelter the plants in winter, and the Swedes coming early into flower generally secures the yield of seed before the trees come out into leaves sufficiently to injure them.

This will now be the busiest time for the horse hoes to work between the rows of early crops. We horse-hoed our mangolds the first time by the 20th of May, and also ploughed between the rows of potatoes at the same date. The potatoes in the rows have since been hand-hoed, and will now be hilled up the first time, and in the course of a week will be hilled with the plough the second time. This applies to the late varieties or the Champion potato. The advantage of having the lines at 84 or 86 inches apart is that the plough can be used instead of the horse hoe, because the former not only destroys the weeds but leaves the land light and loose enough for the running roots to enter freely into the whole space. Although the horse hoe may destroy the weeds, yet the land is more impervious to the runners of the potatoes. There is a further advantage in the potatoes being planted widely apart, for in all cases where the haulm is gross and stout the sun and wind cannot dry the land so readily after heavy rains when the potatoes are closely set. In the early varieties, however, it is not of the same consequence, as the disease seldom attacks them before they are fit to take up for sale. There is still time, if the land is very fine, clean, and well manured, to drill mangold and carrots also, for although the roots will not come so large they may be left thicker in the drills and will yield a good average crop. We have often also grown 26 tons of mangolds and carrots per acre, the seed being drilled as late as the first week in June by once ploughing after green crops, such as trifolium, vetches, and occasionally after a clover lea where a crop of trefoil and rye grass had been taken.

Hand Labour.—In going over our land lately we observed to the tenant that the weeding had not been properly done, but it appeared that the women will not go to work in the fields as they used to do in some districts. Now this is a serious drawback if the weeding is not properly done; but where the corn is drilled at 12 inches between the rows, by using the horse hoe with three flat and cutting shares about 7 or 8 inches wide this will destroy an enormous quantity of the weeds, and also, in the case of either wheat, oats, or barley, facilitate their growth and reduce the hand labour of weeding to a minimum. In the case, however, of charlock and such-like weeds which may be left after horse-hoeing, the revolving weed eradicator made and sold by Ord & Maddison of Darlington may be used with advantage, as this implement is drawn by one horse and covers a space of about 7 feet, pulls the weeds or breaks off the seed heads, leaving them on the surface to die, without injuring the corn if done at the right time—that is to say, when the young plants of corn are about 5 or 6 inches high. The potatoes, mangolds, cabbages, carrots, early turnips, &c., will now require to be hand-hoed. The potatoes a few days after being hand-hoed may then be hilled or earthed the last time. In our own case we do this twice, the second ploughing making a high hill and deep furrow, so necessary to free the land from any excess of rainfall; but then the home farmer must remember that we have the lines of potatoes planted 8 feet apart, and that all the previous work has been done by a light one-horse plough. We have nearly finished cutting the borders of ditches and hedges for the sake of the grass, hogweed, wild parsley, &c., which makes excellent green fodder, for dairy cows when the milk is sold. It also furnishes food for store pigs of all ages and breeding sows, for in case they do not eat every kind of grass or weed it is trodden into manure. The advantage of cutting the grass on the borders is great when the hedges are kept trimmed and neat, besides which no weeds are allowed to run to seed on the borders when they are cut twice a year. The early grasses, such as trefoil and rye grass, will now be fit to cut for hay; and in order to facilitate the making into hay at the least risk we like to use the tedding machine in preference to turning the swathes only, and when the weather is dry about twice tedding will be sufficient. The hay will then be fit for stacking. Both horned ewes and Dorset downs will now have the rams with them; but the ewes should not be shorn yet, for we have always found that they offer to the ram earlier when left in their winter clothes until the last week of June. The dairy

cows should now be carefully attended to, and if the bull does not run with them they must not be allowed to miss the chance of the first offer to the bull, as this is often the cause of cows going barren afterwards. The weaned calves will whilst young require to have their milk or lactine food given at regular times, and should whilst being fed in the grass paddock have a shed to retire into at night.

THE DADDY-LONGLEGS.

I ENCLOSE you in a quill two specimens of the grub which is destroying all the grain crops in various parts of Yorkshire. One farmer has been obliged to plough-up seventy-five acres of wheat. 1, What is the grub? 2, What will it turn into—a fly, or moth, or what? 3, How long does it remain in the grub state? 4, How are we to check its ravages for the present, and how to prevent it from working its evil will next year? All these are questions of



Fig. 65.

the greatest importance to many people. Would you kindly give your readers as much information on this subject as you can collect in the pages of "our Journal?"—C. MARSDEN.

[We publish the above letter in order to invite those of our readers who have been troubled with this destructive pest and have succeeded in extirpating it or checking its ravages, to state the means they adopted; and in the meantime we reply briefly to our correspondent's questions. The grub, fig. 1 in the engraving, is the larva of the daddy-longlegs, which is the familiar name of one of the crane-flies, a Dipterous insect of the genus *Tipula*. These maggots change to the pupa state (fig. 2), from the end of July onwards, and remain in this condition for a short time, when the perfect insect (fig. 4), emerges and deposits her eggs (fig. 1), in the autumn and is afterwards killed by the frost. One insect will deposit three hundred eggs. There are several species of *Tipula* not readily distinguishable except by comparison, but all are alike destructive. *T. olivacea* is the most common, and attacks almost all crops on farms and in gardens. The pest is unusually prevalent this year, and has received the special attention of the Royal Agricultural Society, who have issued recommendations relative to the destruction of the grubs. These instructions in a condensed form are published in our issue of May 20th, page 407. Besides the measures there recommended, rolling the ground frequently with a heavy clod-crusher until it is as hard as a road, has been found beneficial by some cultivators. But the pest is most difficult to eradicate, and we will readily publish communications from farmers and gardeners who are able to supply practical information on the subject.—Eds.]

THE FATTENING OF POULTRY.

WE have often given our opinion, and so need hardly repeat it here, that if young poultry are thoroughly well attended to they will never need special feeding. People who know or care little about their fowls often smile at the care bestowed upon ours in the days of their chickenhood, at their oatmeal porridge, lightened with bread crumbs, and their little pans of milk. When, however, they see on the table in April and May large fowls, which till they taste them they believe to be old cocks of the previous year, but soon find to be delicate Dorking pullets hatched late in January or early in February, they change their tone, and ask, "How in the world do you fatten such birds?" The fact is they are

fattened from the day they leave the egg, and have no special treatment at the end of their career. Such we believe to be the best and cheapest treatment. Where, however, poultry are kept in a more haphazard fashion, and where their attendant has so much to do that the birds are only a by-work, it may sometimes be necessary to fatten them specially. We do not for a moment believe in the old system of buying up lean dwarfed creatures by the dozen at farms to convert them into fat fowls—they have not the frames to take flesh; but birds of good breed, Dorkings, Houdans, Crèves, and others which have been a little neglected, can certainly be greatly improved by judicious treatment. Our French neighbours are far ahead of us in knowledge of the best methods, and therefore we shall translate a chapter from the little pamphlet of Messrs. Fonillier Arnault on the subject.

The Messrs. Arnault are well known as the proprietors of an immense establishment at Gembaie, near Houdan, where last year no less than 45,000 chickens were hatched by artificial means:—"At the end of three and a half months from the time they are hatched we begin by choosing the fifty finest cockerels to put up for fattening, a week later the fifty next finest, and so on every week until the last pullet is gone. The buildings generally used for fattening are kept warm in winter and cool in summer. About Houdan the breeders make pens in the sheds for cattle and sheep in winter, and in summer make them in barns or other airy places. There will be no difficulty in finding buildings answering these requirements, and so we do not give any special directions for their construction. Our way of proceeding is as follows:—Pens are ranged along the walls, each containing fifty fowls. The bottom is covered with a thick bed of straw renewed every day. As soon as the chickens are put in their first feed is served, consisting of a very liquid paste of barley meal and water; the second feed is the same, but for the third the paste is thinned with milk, or, if not, with whey; we also use the liquid refuse from cheese-making—in our country breeders get it by the cask from cheese manufactories. The chickens put up to fat have three meals a day for a fortnight, each time as much as a large wooden spoon holds. After a fortnight the fat begins to appear in lumps towards the tail. At this period to *faisa* them (the common expression), about one-third of an ounce of fat is put into each feed. This fat is only hog's lard of the second quality; we fancy it would be more economical to buy it of the first quality. This second period of fattening only lasts five days, when the chicken is so fat that it could not continue on the system two days more without falling under it. Maize meal will do as well mixed with milk or whey, never with water, which does not properly fatten a fowl, but leaves the flesh bluish instead of white. If we wish to arrive at the highest point of excellence, and to fatten a fowl in the most exquisite manner, egg is added to the food during the last three days to the extent of one egg a day for each fowl. Two operators simplify the work of feeding fattening fowls. One of them (a child can do this) seizes a chicken, hands it to the feeder; he seizes it with his right hand below the wings, and with his left puts its two legs between his knees so as to prevent its moving, then with the same hand takes hold of its beak and opens it, while the right hand inserts the end of a funnel. The left in turn with forefinger and thumb holds the beak open, and the right throws a spoonful of porridge into the funnel. All this operation is much more quickly performed than described. The funnels used are specially made for the purpose, and the ends covered with lead to prevent any wound which would be certain to be given by a common funnel. Two people can easily feed sixty fowls an hour, that is one a minute, with the funnel; but we must admit that the occupation is not a pleasant one. The feeder gets more or less spattered with the food in spite of all the precautions he may take, and although its results are excellent the method might with advantage be replaced by mechanical feeding."—C.

DUCKLINGS.

DUCKLINGS are as liable to die of chills and cramps as young Turkeys, and for that reason must be kept from exposure to cold rains and heavy dews, and away from the streams and ponds until they are a month or six weeks old. When the eggs are hatched by a Duck she will strike a "bee line" for the water with web-footed children almost as soon as they are out of the shell, and as young Ducks are not overburdened with sense they are apt to stay in the water until they are "wet through"; then about one-half of them will die with chills, and the mother Duck will wander around in the dewy grass until most of the remaining half die from exposure. If by chance any survive this course of treatment you will find that constant exposure has "stunted" their growth, and that they will never make as large birds as they would have been had they been properly cared for. Hen mothers do not show such marked anxiety to get rid of their charges, and for that reason are preferred. As soon as the ducklings are well out of the shell keep them in a coop for about a week. Water that has had the chill taken off may be supplied in shallow pans, and the ducklings will dabble around in it and enjoy it. Have your Duck coops as far as convenient from the stream or pond, and they must be moved at least three times a week to fresh ground.

After the ducklings are a week old, if they had a hen mother, the pen may be opened on pleasant days after the dew is off the grass, and the mother and her brood allowed liberty to wander around in search of food. By the time they are six weeks old their under feathers will be well out, and they may be allowed unlimited range. Ducklings are great eaters, and will eat almost anything in the shape of food. Give cooked food, with plenty of green food, until they are old enough to have free range. Almost any kind of food that you would give chicks and young Turkeys is good for ducklings. Until they take to the pond or stream, unless insect forage is plenty, give a little cooked meat. Feed them often, but never give all they can possibly swallow; sometimes ducklings will eat until they kill themselves. After they take to the water they will pick up a large amount of the food that suits them best, and for this reason Ducks are most economically raised in the neighbourhood of ponds, streams, wet marshes, or near the sea.—(*Prairie Farmer*.)

VARIETIES.

POULTRY AT WORCESTER.—The exhibition of poultry at the Bath and West of England Society's Show, which opened yesterday, being both extensive and excellent, we have made arrangements for securing a special report of the classes, which will appear in our next issue.

THE SCOTCH STRAWBERRY CROP.—Strawberry growers in Aberdeen and Perth shires, where hundreds of acres are laid down in this fruit, are becoming alarmed at the long continuance of dry scorching days and frosty nights. The crop is much injured in many places, and it is feared the losses of the farmers will be serious.

THE BRITISH BEE-KEEPERS' ASSOCIATION.—Mr. R. B. Godfrey directs attention to the circumstance of his name being omitted from the report of the meeting published on page 407; not on personal grounds, but, being elected by a large body of the members, he is anxious that he should not be regarded by them as indifferent to the trust reposed in him, and the absence of his name might imply his absence from the meeting.

AMMONIA-FIXED GUANO.—We cite the following from Mr. Ivieson Macadam's pamphlet on the "Food of Plants," issued by the Scottish Horticultural Association:—"The addition of a small quantity of sulphuric acid to Peruvian guano causes the formation, with the ammonia of the guano, of sulphate of ammonia; and at the same time a portion of the insoluble phosphate is dissolved to the condition of soluble phosphate, and there is obtained a more rapid fertiliser. Besides this, the ammonia being fixed it cannot escape as vapour, so that a loss of ammonia is avoided, whilst a manure is obtained in a more suitable condition for the use of the plant."

THE WEATHER AND THE CROPS.—Corn, on the whole, has improved in appearance since we got rid of the east winds; and as June is a wonderful month for developing weak wheats, a surprise may still be in store for us with respect to the leading cereal. Clover hay is already doomed to be a light crop, although there is plenty of time for the growth of old land hay. Land which was well tilled, and brought out fine tilth for rape and mangolds, has been moist enough to secure a regular plant. We speak here from our own experience, and can say we never saw rape germinate more freely or come quicker up to the hoe. Our mangold is also good, but we hear from an excellent authority that, as a rule, mangolds have not yet appeared above ground.—(*Agricultural Gazette*.)

THE CROPS IN IRELAND.—No better seedtime has been experienced for many years than that of the present year. The weather, too, has been on the whole favourable in a country where the greatest danger to be apprehended is an excess of moisture. A week ago there were apprehensions of excessive drought, but in the interval there has all over the country been a good deal of rain; the temperature, which up to that time was warm, very warm for the first half of May, has become colder, and there have been occasional hail showers. The appearance of the country, however, has wonderfully improved during the last week. In almost every instance the crops look healthy, and they are well advanced, and so far encourage the hope of an early harvest. Potatoes, of which an unusual breadth has been sown, have come up well, and as there has been a large importation of new seed, it is hoped that with a fairly dry season the crop may prove sound as well as plentiful. Wheat, oats, and barley promise well, and the hay crops, which were being thrown back by the drought, have been much improved in appearance by the recent rains.

THE BRITISH GOAT SOCIETY.—The second general meeting of members of this Society was held on Monday evening last at its rooms, 446, Strand, Mr. Walter Freeman occupying the chair. A letter was read from the Baroness Burdett-Coutts, suggesting that the Earl of Roesslyn be invited to accept the presidency of the Society, and it was unanimously resolved to act upon this suggestion. The report of the Committee, as read by the Hon. Secretary, Mr. H. S. Holmes-Pegler, stated that the

Society is making good progress, and bids fair to become successful. Since the last general meeting thirty-six members have been elected, bringing the total up to eighty-two. The objects of the Society had been defined to be the circulation of knowledge and general information upon goats, their milk and flesh, with a view to counteract the prejudice and ignorance which still prevail in a great degree on these matters; the improvement of the goat as a breed, and the development of its milking qualities by encouraging propagation from selected strains of superior milkers, and the extension and encouragement of goat-keeping by cottagers with a view of increasing the supply and consumption of milk in rural districts. It had been resolved to appoint a qualified veterinary surgeon, who should give advice to members in cases of disease amongst their goats, and make post-mortem examinations. Arrangements had been made for carrying out the proposal to establish a sale register, in which members might make entries of goats wanted or for sale. The report was adopted, and the balance sheet was also submitted and approved. After considerable discussion the basis on which a herd book should be established was agreed upon, and also details of an arrangement whereby the Society could assist cottagers in purchasing goats through the medium of the Society, and paying for the same by periodical instalments.

THE SEASON FOR BEES.

I HAVE been examining my bar-framed hives, and find them all very backward as to population; but some are rapidly recovering lost ground in spite of the terrible winds that have prevailed this spring. In all I see more honey sealed up than I could have thought possible as the result of the labours of so few bees. Some of it, I fear, is "honeydew" so called, which is merely the sweet excrement of blight or green fly, of which there is too much everywhere this year, as in all dry seasons. Swarming must be very late, indeed I fear some of my hives cannot be expected to swarm till July, so I intend to watch narrowly the development of royal brood, and to prevent swarming in the case of all late hives by the regular removal of all these as fast as they are formed and before any are sealed up. If necessary or deemed advisable I shall take some bar-frames fitted with sealed worker brood out of these hives disposed to swarm, and after sweeping off the bees introduce the combs into my weaker stocks. Empty frames with comb foundation will be shipped-in in place of the brood combs removed. Of course there will be so much less prospect of a good honey harvest, but better this than risk a further multiplication of weak or late swarms such as we had last year. If any swarms come in July they should either be returned to their hives if they come late in the month, or if early they should be strengthened by the addition of another swarm and fed up when the honey harvest relaxes.

To-day, May 27th, has come a glorious rain. It is still raining after seven hours' good downfall. Nothing could be more acceptable or better timed for hay, and fruit, and honey. Take it altogether the weather for agricultural purposes has thus far been perfect. With God's continued blessing we shall yet have a bountiful harvest of all kinds of produce.—B. & W.

COTTAGE BEE-KEEPING.

"BEGELY" is right as to his original interpretation of my meaning in the article on "Cottage Bee-keeping," which appeared in the Journal of the 13th inst. The hive inverted is a hive turned upside down. Perhaps my meaning will be clear beyond mistake if I repeat in other words the instruction which I wished to convey. Suppose a seakale pot turned bottom upwards with its shoulder resting in a convenient nest or hollow place made for it on the ground. Next, treat a common straw hive in the same way, putting it topey-turvey inside the open seakale pot, only be careful that the rims of the hive and of the seakale pot are in the same plane, so that a board placed upon the pot shall also rest upon the hive rim. Now set the stock hive with its bottom board over the inverted hive and pot in such a way that the hole in the floorboard, according to my previous instruction, shall allow of the bees descending into the upturned empty hive below, and not into the space, if any, between the outer sides of the hive and the inner sides of the seakale pot.—B. & W.

BEE-KEEPING MADE EASY.—No. 6.

SUPERING.

SUPERING is one of the most pleasant occupations in the apiary, for supers are easily placed on hives and easily taken off, are pretty and profitable. Supers of every size and shape, made of any kind of materials, and filled on any kind of hives, are very acceptable. In my last letter under this heading it was stated that hives filled with combs are ready for supering about a week after the combs are covered with bees, or as soon as brood is found in the outside combs of the hive. It is desirable to induce the bees to enter the supers and commence work in them before they are

seized with a passion for swarming. In warm weather this passion for swarming is common to all honey bees and may become uncontrollable; therefore I recommend early supering and roomy supers. Where large supers are not saleable, sectional supers should be used on large modern hives. My contention is this, that there is less risk and more gain by giving the bees ample room during the honey season. The crown holes of my hives are 8 and 4 inches wide, which I think are not too large, and over these holes I place supers capable of holding from 20 to 30 lbs. each. On two or three occasions only, during a period of fifty years, have I found brood in the supers. In these large supers a piece of guide comb is used and a ladder for the bees to reach it. This ladder is simply split wood as thick as a man's little finger. The guide comb is pure white virgin comb taken from other hives, and by using it largely the bees more readily enter and take to the super.

To make this matter clear let me say here that my glass supers have lids like confectionery bottles, and are wider everywhere than at their bottoms. By lifting off their lids and dropping into them large pieces of empty virgin combs the bees adopt them at once, and soon fill them in honey weather. This is supering made easy for both bees and bee-masters. Though I have not yet tried artificial comb foundations, I believe they can be used successfully after this fashion. Doubtless natural comb is much better than artificial foundations for such purposes, and perhaps more profitable too, but in the absence of natural combs I would not hesitate to use the artificial foundations. In filling or partially filling supers with empty virgin combs, or otherwise with comb foundations, it does not matter much if the bee-master fails to fix them, as he would like to do in close imitation of Nature, for the bees will put all right, and before they finish all the work of their masters' hands will be covered up, and such supers are as presentable and beautiful as those that received no artificial filling-in. I am now about to commence supering with wooden boxes, purchased for 2d. each from grocers and fruiterers. A hole 8 or 4 inches wide will be cut out of their bottoms, and sheets of glass will be used for tops or lids. Such supers are cheap enough and quite as eligible as any other kind. By using glass tops I shall see what progress is made in them, and when they are ready to come off.

If supers without bottoms be used, sheets of paper with central holes should be placed between them, and hives to prevent the combs in the supers from being fastened to the crowns of the hives. When supers are used without guide combs the bees often build their combs from the crowns of their hives upwards. This should be prevented if possible, for if the supers are not filled, and the combs in them fastened to their sides and crowns, the supers will not contain and carry the combs when they are removed. Even if the combs are cut from the hives before the supers are raised or lifted off they will remain as loose combs. It is desirable to have separations of some kind between hives and supers to facilitate removal without breakage, and it is desirable also to induce the bees to build their combs in supers downwards. If glass supers with open or lidded tops be used it is advisable to use wood lids at first, so that the guide combs could be fastened to the wood, and as soon as the combs reach the sides of the supers and be fastened to them the wood lids should be cut off and the glass lids placed on. In what have been called 'crystal palaces,' large glass supers capable of holding from 50 to 100 lbs. of honey-comb, guide combs from both bottoms and tops may be well used, for it is quite possible to give the bees the advantage of 6 inches of comb upwards and 6 inches downwards to begin with; and if the bottom combs are right below those above them, the bees will unite them as perfectly as if all had been built from one point. The keenest eye of the greatest expert could not detect a flaw or an irregularity in the junction.

Supers should have no separate doors—no direct communication with the outside world. Bees with soiled feet and pellets of pollen on their legs are forbid admission. Housemaids only may go aloft, and carry thither the honey that has been prepared below.—A. PATTIGREW.

TRANSPORTING BEES TO INDIA.

QUESTIONS connected with the different races of bees, their specific variation in structure, temper, size, industry, and power of endurance, are receiving unwonted attention; and as a result plans of packing which have enabled stocks to endure prolonged confinement under circumstances of peculiar trial are more than commonly interesting.

During 1878 and 1879 I sent two stocks and two nuclei via the Red Sea to Bombay; the bees after their unhappiness had a further journey into the interior, entailing an incarceration of nearly forty days before they reached their then owner, an Indian gentleman of distinction. The nuclei carried each four of my half Woodbury frames, as used by me formerly for queen-raising. These were well stored with sugar, while the backs of the boxes contained pouches cut off from the bees by perforated zinc, and into these pouches sponges filled with water were occasionally put during the voyage. Perforated zinc covered the frames above, while the boxes were made 2 inches deeper than accommodation of the frames required. No other precautions were taken except

that the combs were well fixed and the frames secured against lateral sway. Both nuclei arrived in capital condition.

The two stocks, one black and one Ligurian, each contained eleven frames of Woodbury size, three of which had sealed brood to supply young bees to replace the gaps made in the ranks of the adults. The hives had each a half storey beneath and a half storey above, the lower half storey having its sides of perforated zinc while the same material went over the top. The bees were thus able to cluster under or over their frames as they might desire, while the dead would simply fall clear away from the combs and so no longer incommode the living. The device of pouches and sponges was added as with the nuclei. The blacks arrived with stores nearly exhausted but in perfect condition. The Ligurians were starved "dead to a man," as my esteemed correspondent expressed it. With the one exception, the cause of which is clear, the bees survived their long journey and endured the baking heat of the Red Sea in the hot season. No combs collapsed and the mortality was not destructively great. The success, however, ended here, as the accompanying quotation from one of the owner's letters, in which he refers to the nuclei only, will show.

"You will be sorry to hear that I saw the last of my bees about ten days ago. Both the Ligurians and the blacks at first went on all right, the latter having bred and brought forth a good progeny last August, and the former having built new combs to a considerable extent, when about December I felt that both hives began dwindling away in numbers. Previous to that I had noticed that they had two very powerful enemies in the common garden lizard and the rats. I destroyed nearly every one of the former in my neighbourhood, and took measures to prevent the latter getting to the hives; but I could not find out the cause of the gradual disappearance of the bees. In December, January, and February, by constant feeding, I induced the bees to stay in, and then there was no diminution; but they could not be kept in longer when the sun got hot, and very few returned. The last to disappear were the two queens, and I never saw a dead bee on the floorboard. I am afraid swallows and such small birds must have preyed on them. I am going to domesticate some of our native bees in my empty hives."

It is regrettable that this attempt at acclimatisation failed, but the fact of the safe transit of the bees through considerable difficulties is in itself at least interesting.—F. CHESHIRE, *Avenue House, Acton, W.*

BEE ECCENTRICITIES—EARLY SWARM.

A VERY fine swarm of bees turned out of one of my stocks at 9.30 on the morning of the 26th. It was a first swarm of course. It lighted on two branches of one gooseberry bush in two clusters about a foot apart. I was astonished at the quantity, and successfully hived both clusters in a box hive 17 inches by 12 and 12 deep, and at once placed them on a stand with my other stocks in a bee house, leaving the hive raised half an inch all round from the floorboard. I congratulated myself on my large early swarm, thinking, of course, all was safe. It was a very hot afternoon; and at 2.30, to my consternation, the swarm turned out in a mass, hovered a few minutes in an apple tree, and then rose in the air and were out of sight in a few moments. On examining the box I found they had built a piece of comb the size of a crown piece on the wax foundation of the centre bar, the foundation being half an inch wide. Will Mr. Pettigrew or some of our bee-masters kindly give their opinion as to the cause of this evacuation, and the means to prevent a similar occurrence in future? Till now, once a swarm was hived and settled I always thought it was safe. Searching the hedges around till dark found no traces of them, but the next day I was told by a man that he was roused from his work at a place two miles from here by a noise like the distant sound of a brass band; looking around and up he saw an immense swarm of bees going rapidly with the wind. I followed up this clue, and at last found them in a straw skep well mortared down in a man's garden. He had bought them the previous evening of the man in whose garden they lighted; so after some little expense I got them home in the evening, they having in the twenty-four hours built two pieces of comb 6 inches by 4, and a smaller piece, which all fell in transit.—J. ROBINSON, *Bury St. Edmunds.*

BEEs are sometimes very whimsical. The case mentioned by your correspondent, "D., Deal," is not at all uncommon. Swarms on being hived are sometimes difficult to please. I had one that would not accept one of three new hives. It left them all and clustered on currant bushes. When a swarm "takes to" a hive the bees speedily gather themselves together into a cluster and commence work, comb-building and field work. When otherwise they decide against their new house, they do not gather themselves into a cluster and commence work, but sit all round the inside of the hive about an inch thick, listless in appearance but busy with the thought of a fresh move before noon of the morrow. Frequently the queen does not go with the bees in attempting to swarm. Such attempts are miscarriages and the bees return. The

bees of your correspondent did so in the first attempt. Next day they swarmed properly and were hived in a skep. In the evening they were transferred to a bar-framer, which they did not like or take to at first. In forsaking it we are led to believe that the queen remained in it; indeed the gardener thought he saw the queen there. The bees on discovering their queen returned to the hive they had abandoned, or were abandoning. In all large apiaries much greater eccentricities may be noticed occasionally; and if we could see to the bottom of such eccentricities it would be found that bees have wills of their own and reasons for all they do. "D.'s" is probably an old one—her abdomen tapering and pointed—tottering with age and feebleness, and will soon die.—A. PETTIGREW.

OUR LETTER BOX.

FEEDING PIGEONS (*T. H.*).—Good old tares and small horsebeans are considered the best food. A little wheat occasionally is a good change. Fresh and clean water is also another requisite; and, where Pigeons are confined, as some fancy breeds are, they ought to have grit, lime, salt, and salad. These are necessary to keep the birds in health. The first three are most usually given in the form of what is technically called a salt cat. The salt cat is composed of about equal quantities of clean unctuous loam, such as brickmakers use, coarse gritty sand or fine gravel, in which the grains are about the size of pins' heads, and old mortar; to this add a small quantity of salt.

ERRATUM.—In my letter on "Bee Eccentricities" on page 439 there is a misprint. "About ten of them" should be "about ten o'clock they set off"—meaning that the swarm with the exception of a few went back to the bush.—D., Deal.

MEADOW UNSATISFACTORY (*Irish Subscriber*).—The pasture land referred to as formerly bog and having been drained and heavily clayed, but still being unlevel and bearing some coarse grasses, would perhaps be best ploughed and the land worked down and made level, but before doing so it would be best to pare and burn the turf, and then the ashes would manure the surface sufficiently to produce a good turf if sown with grasses adapted for permanent pasture. This, however, is only recommended in case the land cannot be made level in any other way. Possibly if the hamocks or grasses growing in coarse bunches were cut up with the turf-cut and burned into ashes, these with other earthy materials mixed with yard manure spread over, and some grass seeds sown, would renovate the turf without disturbing the appearance of grass land so situated as to be retained for ornamental purposes.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.		9 A.M.					IN THE DAY.					Rain.
1889.	Baromet- ter at sea and Sea Level	Hygrome- ter.		Direction of Wind.	Temp. of Air at 1 foot.	Shade Tem- perature.		Radiation Temperature.		In- sun.	On grass.	
May.		Dry.	Wet.			Max.	Min.	In sun.	On grass.			
Sun. 23	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	In.		
Sun. 23	29.941	57.3	50.8	S.W.	56.3	63.4	45.8	99.8	40.8	—	—	
Mo. 24	29.858	60.1	53.7	S.W.	55.9	63.2	50.9	106.0	46.3	0.014	—	
Tu. 25	30.074	59.0	54.0	S.W.	56.0	68.7	49.8	123.3	46.3	—	—	
We. 26	29.964	68.8	57.5	S.	57.0	83.0	47.3	131.5	52.1	—	—	
Th. 27	29.723	63.7	58.7	S.W.	56.2	71.3	58.3	125.5	52.8	0.012	—	
Fri. 28	30.346	57.7	51.2	N.W.	55.1	65.4	45.2	125.3	42.3	—	—	
Sat. 29	30.466	58.3	49.0	N.W.	57.3	66.8	41.0	128.0	34.3	—	—	
Means.	30.053	61.1	53.6		57.1	70.3	48.3	119.8	43.5	0.026		

REMARKS.

- 23rd.—Fair, but overcast, with strong S.W. wind.
24th.—Overcast dull day, and high wind; slight rain in evening.
25th.—Fine bright day; beautiful sunset.
26th.—Very warm fine bright day; evening dull and cloudy; lightning for several hours in W. and N. after 9 P.M.; hot night.
27th.—Morning bright with sunshine; afternoon cloudy; high wind, slight shower at 4.30 P.M.; fine evening.
28th.—Overcast, cooler, and much wind; fine bright evening.
29th.—Rather overcast at intervals, but generally fine, pleasant, calm day; evening cloudless.

The average temperature for the week nearly 5° above that of last week, owing greatly to the heat of the 26th. The absence of rain continues in this district, though considerable amounts have fallen in other parts of the country.—G. J. SYMONS.

COVENT GARDEN MARKET.—JUNE 2.

PRICES remain much the same, business being brisk in Strawberries and Peaches, while Grapes are a complete drug on the market.

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Artichokes.....	dozen	2 0 to 4 0	Mushrooms	pottle	1 0 to 1 3
Asparagus.....	bundle	1 6 5 0	Mustard & Cress	punnet	0 2 0 0
Beans, Kidney ..	100	1 0 0 0	Onions.....	bushel	3 6 5 0
Beet, Red.....	dozen	1 0 2 0	" pickling	quart	0 0 0 0
Broccoli.....	bundle	0 8 1 6	Parsley.... doz.	bunches	6 0 0 0
Brussels Sprouts	1 doze	0 0 0 0	Farsipars.....	dozen	1 0 2 0
Cabbages.....	dozen	1 6 2 0	Peas.....	1 quart	2 6 3 6
Carrots.....	bunch	0 4 0 6	Potatoes.....	bushel	3 9 4 6
Capicums.....	100	1 6 2 0	" Kidney.....	bushel	4 0 0 0
Cauliflowers....	dozen	0 0 3 6	Radishes.... doz.	bunches	1 6 2 0
Celery.....	bundle	1 6 2 0	" Rhubarb.....	bundle	0 4 0 6
Coleworts..... doz.	bunches	3 0 4 0	Salsify.....	bundle	1 0 0 0
Cucumbers.....	each	4 0 0 0	Scorzoner.....	bundle	1 0 0 0
Endive.....	dozen	1 0 2 0	Seakale.....	basket	0 0 0 0
Fennel.....	bunch	0 3 0 0	Shallots.....	1 lb	0 3 0 0
Garlic.....	1 lb.	0 6 0 0	Spinach.....	bushel	3 0 0 0
Herbs.....	bunch	0 3 0 0	Turnips.....	bunch	0 4 0 0
Leeks.....	bunch	0 3 0 4	Vegetable Marrows	each	0 0 0 0

WEEKLY CALENDAR.

Day of Month	Day of Week	JUNE 10—16, 1880.	Average Temperature near London.			Sun Rises.	Sun Sets.	Moon Rises.	Moon Sets.	Moon's Age.	Clock after Sun.	Day of Year.
			Day.	Night.	Mean.							
10	TH	South Essex Show (Leyton).	69.4	47.1	58.2	3 45	8 13	5 51	10 6	3	0 45	162
11	F		72.0	47.7	59.8	3 45	8 14	6 58	10 30	4	0 33	163
12	S		71.1	46.1	58.6	3 44	8 15	8 7	10 50	5	0 20	164
13	SUN	3RD SUNDAY AFTER TRINITY.	71.6	47.6	59.6	3 44	8 15	9 18	11 8	6	0 8	165
14	M	Royal Botanic Society—Second Summer Show. York Floral Fête.	72.3	47.9	60.1	3 44	8 16	10 39	11 24	7	before	166
15	TU		72.8	48.2	60.4	3 44	8 16	11 42	11 40.	8	0 18	167
16	W		73.4	48.3	60.8	3 44	8 17	0 a 58	morn.	9	0 30	168

From observations taken near London during forty-three years, the average day temperature of the week is 71.6°; and its night temperature 47.5°.

STRAWBERRIES FOR AUTUMN AND WINTER.

STRAWBERRIES in pots have this spring far exceeded our expectations, and have produced fruit equal to that of past years, when the autumns were more favourable for maturing the crowns. The cultivation of this wholesome and delicious fruit will now engage the attention of many, and no time could be more suitable for describing the cultivation of the plants to produce fruit during the autumn and winter, when it is so much esteemed for dessert. Cultivators of Strawberries very properly endeavour to extend the fruiting season outside over the longest possible period by planting on south borders, to obtain fruit after the spring supply in pots, and in northern aspects for succession; but after doing all that can be done in this respect the fruiting season in the open air is comparatively short. The Strawberry, however, is fortunately most accommodating when cultivated in pots, and ripe fruit can be gathered during the greatest portion of the year.

Ripe Strawberries through September, October, November, and December should no longer be regarded as a novelty, but should be as much a necessity as ripe fruit in spring. If the plants that have produced fruit this spring are taken care of they will bear fruit freely again in the autumn. Underhill's Sir Harry and Vicomtesse Hericart de Thury (syn. Garibaldi) are the two best varieties for this purpose, but doubtless others would also produce good crops at that season if properly prepared. Sir Harry I find the best from November onwards, when it appears as fruitful as in spring and produces equally large fruit, while the Vicomtesse is best for succeeding the late outdoor fruiters in early autumn. For ensuring autumn fruit a start should be made at once. The earliest forced plants are not the best for this purpose—that is, those started in November or December. It is true that ripe fruit can be gathered from these plants again in July, and it is easy to retard them still further by removing the earliest flowers that open, but the crop is not abundant nor the fruit large. The plants I depend upon for affording ripe fruit in September are successional batches of those started about the commencement of the year. These are carefully hardened off after the fruit has been gathered and then placed outside to rest. This is essential, but while resting the plants must not suffer by want of water.

For the first autumn supply the plants are grown in pots. They have the old balls well reduced, and are then placed in the same size pots and well supplied with water. They are also liberally syringed to keep the foliage free from red spider, which if dry weather ensues is almost sure to infest them while in the temporary standstill condition consequent on reducing the roots and repotting. If the plants are free from spider in the autumn, which they will be if properly attended to, it never troubles us in spring while forcing, provided the drainage is clear and abundance of water is given. The object of growing the earliest plants in pots for succeeding the outside crops is a provision against un-

favourable weather, which may occur when the fruit is ripening; the plants can then be quickly removed to shelves indoors or sheltered in frames. If the weather is favourable the plants can remain outside and the fruit be gathered from them. Other batches can be reduced as described, and planted out in a rich border, and if necessary well supplied with water; but planting-out is referred to for one purpose only—namely, to save time and labour in watering; and I prefer keeping the plants in pots. By reducing the old balls liberally when planting out the plants can be the more readily placed in 6 and 7-inch pots at lifting time, which should be when the fruit is set, or in August when the flowers are appearing. The latter plan is the best, as the plants have more time to become established again, and no check is given to the fruit when swelling, while the slight check received in potting does not appear to injure the flowers. The plants should be watered when potted, placed in a frame, and be kept close for a time, and if the weather be hot they should be lightly shaded until root-action commences. When established the plants must have more air and be gradually hardened. They can either remain in the frames or be placed outside for a time until the fruit is set. The setting of the fruit outside entirely depends upon the state of the weather. When set thinning must be resorted to, as it is as important in the autumn culture of Strawberries as in the spring if fine fruit is the object.

Care must be taken that the plants are not left outside when the nights commence being cold and there are signs of frost. Even slight frost will check them, and it is uncertain whether the fruits will swell to fair size, and if they do not the labour of the cultivator is wasted. When plants have not set sufficient fruit for a crop before the cold nights occur and yet have plenty of bloom, it is wise to place them upon shelves in Peach houses and vineries. A free circulation of air must be allowed, and in this position they soon set an abundant crop. When fruit is required through December and into January it is necessary to commence the work of retarding early by selecting the latest bloomers and subjecting them to cool airy treatment without checking the plants and fruit, which might result in the entire destruction of the crop. The plants do not grow so freely in winter as in spring, and if they have once been brought forward in heat during the declining days of the year they will not bear subjecting to cooler treatment, which causes the fruit to decay; and the plants when once starved and again placed in a higher temperature are liable to decay round the base of the stem.

Further, it must be understood that at the season of the year alluded to the fruit will not ripen nearly so quickly as during spring under the influence of sun and a high temperature. The latter for autumn and winter fruit is not in the least advantageous, but the contrary. The result of a high winter temperature is insipid and flavourless fruit. A medium temperature is best, say 60° at night, with a small rise during the day. Air should be admitted freely on all favourable occasions, especially during sunshine and when the atmosphere is tolerably dry, a good circulation of air being essential to the successful culture of winter

Strawberries. Good flavour is promoted by a rather dry atmosphere, a warm temperature heavily charged with moisture soon causing the fruit to decay. To prevent a stagnant atmosphere the ventilators of the house should be left slightly open all night, which will be attended with the most satisfactory results. It must be remembered a good number of plants will need to be in heat, from which to maintain a supply of fruit during the sunless and cloudy days of winter. A good succession of fruit is obtained from each plant during winter, as all the fruit does not ripen together as in summer.—WM. BARDNEY.

TEA ROSES.—No. 3.

It will be seen from former notes that I rely on a succession of growths from the base of the plant to furnish the best blooms under ordinary pot culture. But as the growths coming from the base of a healthy unstunted plant are very vigorous, they require a large amount of sunshine to consolidate them as they are made; therefore this system cannot be applied to plants for forcing into flower at midwinter, and as the growths become weaker as soon as there is the least check from want of root room or any other cause, it cannot generally be conveniently continued with pot culture after the plants are three or four years old. They then give place to a succession of younger plants, and are themselves either planted out or henceforward treated more after the way of H.P.'s when grown in pots—i.e., they are grown with the view of thoroughly ripening the wood, so that it may be cut back in the autumn just as if it were an H.P. or a Bourbon. Possibly all the varieties may not be amenable to this treatment, but some of the best of the older sorts are admirably adapted for it, and among them I would specially recommend *Souvenir d'un Ami*, *Catherine Mermet*, and *Devoniensis*. These three sorts furnished beautiful flowers of fair size in the third week of January this year, and the same plants kept up a succession of excellent buttonhole blooms for nearly three months afterwards.

These plants for forcing were kept outdoors till the middle of November, when they were cut back to dormant eyes, and after a few days were placed in a minimum temperature of 55°, where they immediately started growing and formed flower buds on every shoot. I have never succeeded in flowering Hybrid Perpetuals satisfactorily before March, the flowers which come before that month are always wanting in colour and substance; but Teas when well grown, although the colour may not be quite the same in January as in April, it is always beautiful, and substance of flowers seems to depend almost entirely in their case on the vigour of the plants.

Healthy plants three or four years old and not stunted, in any way are very suitable for planting out. Of course I am imagining all the time that the plants are on their own roots, as whatever may be said in favour of *Manetti* or *Dog Rose* stocks for Hybrid Perpetuals is not applicable to Tea Roses, whose permanent existence, with the exception of the more vigorous climbing sorts, is altogether dependant on what many people would call suckers. *Catherine Mermet*, which is perhaps the best indoor Rose in early spring, is not satisfactory outside. *Souvenir d'un Ami* in a good season is equally as good outdoors as it is inside. *Alba Rosea* succeeds in both places, and it is the best sort I know for flowering when ten or twelve months old, its blooms at that age being perfect in every respect. Of course the old *Devoniensis* is quite indispensable for every position and every mode of culture, for although it does not produce half as many blooms as *Alba Rosea*, it is distinct in shape, beautifully scented, and it is a favourite with everybody. *Sombreuil* is not worth growing indoors, as it so often comes quartered and misshapen, but outdoors it is often very good, and it has a peculiar scent, different from any other Rose with which I am acquainted. I have purposely named only old standard varieties, as the newer kinds have not been sufficiently proved here under the system of culture I recommend, but when once they can be had in the same naturally vigorous habit of growth which their foreign stocks at present do a good deal to prevent, I have no doubt that many of them will be found to be equally as amenable to it as those I have named.

Where I find Tea Roses do best outdoors is against walls on the north side of the houses. They are planted in soil such as would be used for fruit trees, and they require very little attention beyond keeping them clear from insects. In my opinion the mistaken notions about Tea Roses are that they are excessively tender and want a southern aspect, and that they must be planted in light soil. I do not say that they will survive

every winter in the north, for I have had no chance of proving that, but they are certainly as hardy as the common China, only the common China has the advantage of being allowed to grow on its own roots, and consequently if cut down to the ground it generally springs up afresh from the bottom.

I have never seen Teas do as well on any other aspect of wall as they do on a northern one, and from what I have seen, were my abode shifted to the north of Yorkshire to-morrow I should expect to be able to grow Tea Roses, at any rate on the north side of a heated house, where they would not be subjected to extreme sun heat, or extreme frost. Of course the hardy climbing sorts, of which *Gloire de Dijon* is the type, will do anywhere excepting on a south wall, but these, too, to be permanent must be on their own roots, and be encouraged to make new growths from the base. That light soil is unsuitable for growing Roses of any kind has been proved over and over again, it being almost impossible to keep them clear of parasites when growing in such a medium.—WM. TAYLOR.

CUCUMBER AND TOMATO PLANTS FROM CUTTINGS.

ACCORDING to my experience few seeds have been of that inferior description which they were predicted to be at the beginning of the season; but Cucumbers appear to be amongst the few which do not possess their usual vitality. This is to be regretted, because as a rule Cucumber seed is very expensive, few packets containing more than from eight to ten seeds for half a crown or more. To raise a number of plants from seed at this rate is out of the question with many, especially if a large proportion of the seed fail; but the cheapest and surest way of raising plants is to propagate them by cuttings. After one or two plants have been raised from seed no more need be sown, but a succession of young plants may be kept up throughout the whole season from cuttings. Besides cheapness and surety, this plan possesses another great advantage. A number of plants may be raised from seed supposed to be *Telegraph* or any other variety, but probably only one of them may come true, the others being comparatively worthless. To take cuttings from the best and raise a stock of them is where the advantage rests, and of great importance it is; besides, Cucumber plants raised from cuttings are always more fruitful than from seed, the wood being very robust and short-jointed, and plants from cuttings come into fruit much quicker than seedlings. About ten days ago I placed a number of cuttings in pots, and they have now been planted in frames, larger plants than could possibly be had from seed in three weeks, and some of them are showing fruit. Early in the spring I bought a packet of *Hamilton's* new Cucumber *Sir Garnet Wolseley*. It has proved so superior that I wish to increase the stock. To buy more seeds would be rather expensive, but by taking a good batch of cuttings I can thereby secure a large quantity at once.

The points of the shoots, about 6 inches long, are the best for cuttings. They should be strong, healthy, and clean. They are prepared like any ordinary cutting, and when inserted in any light sandy mixture and plunged in a bottom heat of 70° they root freely. They should be shaded from bright sunshine and never allowed to become dry. Four or five may be rooted in a 4-inch pot, or they may be inserted singly in thumb pots. From either of these they may be transferred to the bed at once with every certainty of their doing well. When any old plants show signs of losing energy, cuttings should be taken at once if it is a good variety. Those who have not tried Cucumber-raising in this way should do so, as they will be gratified with the result.

All I have said about Cucumbers applies to Tomatoes. Fine plants of them can be had from cuttings, and they root even more readily than Cucumbers; they also seem to be shorter-jointed and to be more fruitful than seedlings. Any of the side shoots which are generally produced in such numbers on Tomatoes do well for cuttings. When rooted they grow or run up much more quickly than Cucumbers, and when a number of them are inserted together in a pot they should either be potted singly or planted out as soon as they are well rooted. Some may be planted out in beds, others may be grown in pots, and young plants may be shifted into large sizes of the latter from the cutting pot without any intermediate shifting.—A KITCHEN GARDENER.

SOME YELLOW FLOWERS.—A plant of the yellow *Chrysanthemum frutescens* *Etoile d'Or* has been sent to me, and I

have no doubt it will prove very useful, the shade of yellow is so soft and pleasing. I make this note to draw attention to other yellow flowers which I find extremely useful for decorative purposes. Of these perhaps the finest are the Globe-flowers, *Trollius asiaticus* and *T. Fortunei* being the best of the group. The native species, *T. europæus*, flowering earlier, is also good. In March and April we have quantities of *Doronicum austriacum* and *D. caucasicum*, of which I like the first-named the best. Some late blooms of these vie with the new *Chrysanthemum* in beauty. Then, going to the woods, *Doronicum Pardalianches* is now flowering, and is very beautiful. Later the other naturalised *Doronicum* will supply flowers; and later still we have quite a gem in *Chrysanthemum segetum*, an inhabitant of our corn fields and one of the most beautiful of "weeds." Then there is a very good yellow single *Dahlia* which blooms late into autumn, and after that one must rely on indoor flowers until the Winter Aconite comes in. —R. P. BROTHERSTON.

GAULTHERIA SHALLON.

OFTEN as I have included this useful plant in lists of American shrubs, yet it proves useful in so many ways that special attention must be drawn to it. Its popular designation of Creeping Wintergreen conveys to the mind of those who are unacquainted with it some idea of its value for clothing bare surfaces under the drip of trees, which it does thoroughly, and its handsome thickly clustering foliage is always pleasing as thus seen. It spreads with considerable rapidity, and makes a capital edging to shrubby paths. It forms pretty tufts in a border of perennials, and tells well in a rockery of bold and rugged character.

I have planted it in a variety of places and soils, and find it thrives everywhere. Yet while this proves how robust, hardy, and accommodating it is, it is also worthy of a select and prominent position for the attractive form in which it is then seen in June. Just now a tuft of it growing in a sheltered position at the foot of a rockery is one of the brightest gems of the garden, its foliage being almost concealed by the thickly clustering spikes of pure white Heath-like flowers, having pink-tinged stems, and a curious pink down upon the calyxes. —EDWARD LUCKHURST.

ROYAL HORTICULTURAL SOCIETY.

GREAT SUMMER SHOW—JUNE 8TH, 9TH, 10TH, AND 11TH.

ALTHOUGH the Show is held nearly a fortnight later than the principal event of last year, and consequently the magnificent Roses that constituted the chief feature of that Exhibition are absent now, yet a show of great extent, richness, and variety is arranged in the great marquee, and the large tent 500 feet in length which leads to it. Besides the Roses, the season for which is too late (yet Mr. George Paul exhibits well), we miss the telling masses of Clematises and the superb collection of choice plants of Messrs. Veitch, and some Azaleas, yet the "effect groups" are more numerous than last year; the stove and greenhouse plants are better; Orchids more largely represented and rich; Tuberous Begonias finer—indeed magnificent; Calceolarias better, and Ferns are fully equal to those previously exhibited. Fruit is also exhibited in much larger quantity and of superior quality, and vegetables are excellent. Thus the Show on the whole is an admirable one, and shows clearly that the "old Society" enjoys the confidence of the leading cultivators; and the Council may well be satisfied with the response to their efforts to produce a display as large and varied as possible, and to make provision for the greatest number of those interested in horticulture visiting it. The Exhibition is well arranged, and reflects credit on all who share in its management. The attendance on the opening day was large and distinguished, notwithstanding that heavy rain occurred about the time of its opening, but the day was afterwards fine. The Show remains open till Friday evening, and all should inspect it who have the opportunity of doing so, for an exhibition of this nature not only gives much pleasure, but is highly instructive to those identified with or interested in horticultural pursuits.

ORCHIDS.—These are staged in considerable numbers, and many of them are of high quality. They constitute an important feature of the Exhibition, and attract crowds of admirers. In the nursery-

men's class for ten Orchids, distinct, Mr. B. S. Williams, Holloway, was placed in the foremost position with a splendid group, consisting of *Cattleya Mossiae* superba, with twenty-five flowers; *C. Warneri*, with twelve grand blooms; *Odontoglossum vexillarium* and *O. Alexandræ*, fine; *Masdevallias Harryana* cæruleoens and *Veitchiana*; *Cypripediums barbatum*, superbum, and *niveum*, fine masses; *Orchis foliosa*, with nearly thirty spikes; and a huge dazzling potful of *Epidendrum vitellinum majus*. Messrs. T. Jackson & Son, Kingston, Surrey, were placed second. In this group *Dendrobium thyrsiflorum* had thirteen fine racemes; *Masdevallia Harryana*, very rich; *Cattleya Warneri*, a grand dark variety; a capital example of *Odontoglossum vexillarium*, *Aërides Dayanum*, *Saccolabium præmorsum*, *Calanthe veratrifolia*, *Cypripedium barbatum*, *Epidendrum vitellinum majus*, and *Oncidium selligerum*, all attractive. Mr. Henry James, Castle Nursery, Lower Norwood, was placed third with smaller examples.

In the open class for fifteen Orchids Mr. Douglas, gardener to F. Whitbourn, Esq., Loxford Hall, has the chief position with a beautiful group, the flowers very fine, fresh, and well coloured. *Dendrobium thyrsiflorum* has twelve grand racemes, and very conspicuous is a towering and well-flowered specimen of *D. Dalhousianum*; *Cypripedium caudatum* roseum has remarkably fine flowers; a good *C. villosum*; *Odontoglossum vexillarium*, *O. Roessli* album (the latter with twelve flowers) very chaste, *O. crispum*; *Aërides Fieldingii*, *Lælia cinnabarina*, *Masdevallia Harryana*, *Orchis foliosa*, *Dendrobium Bensonei*, a good plant of *Cattleya Warneri*, and *Epidendrum vitellinum majus* complete the group. Mr. Henry James is a good second, his collection containing a fine mass of *Cattleya Mossiae*, *Vanda suavis* with fine flowers, *Dendrobium suavisimum* in excellent condition and extremely bright, *Epidendrum prismatocarpum*, *Anguloa Clowesi*, and some others the same as those above enumerated. Mr. Rutland, gardener to the Duke of Richmond, Goodwood, was placed third with a neat group containing some good plants, notably of *Brassia caudata*, *Vanda suavis*, *Lælia purpurata* (very rich), a large piece of *Oncidium sphacelatum*, *Odontoglossum vexillarium*, three good spikes from one growth with nineteen fine flowers; *Dendrobium densiflorum*, *D. nobile*, and a few smaller examples.

In the amateurs' class for ten Orchids the first position is gained by Mr. Reeves, gardener to C. Hart, Esq., Beaufort House, Leyland Road, Lee, with *Masdevallia Harryana* var. *Bull's Blood*, very fine; *M. Veitchiana*, grand flowers; *Odontoglossum cirrhosum*, *O. Halli*, *O. vexillarium*, *O. Alexandræ*, *O. Pescatorei*, *Epidendrum vitellinum majus*, and *Cypripedium niveum*. Mr. Reeves is evidently an excellent grower, the plants being healthy but not large, and all the flowers fine. Mr. Child, gardener to Mrs. Torr, Garbrand Hall, Ewell, is second, his noteworthy plant being a fine specimen of *Aërides Fieldingii*, with half a dozen fine branched spikes and very beautiful.

For a group of *Odontoglossum* Mr. W. Bull, Chelsea, obtained the premier award with an extremely attractive and tastefully arranged collection. A large number of species and varieties are represented, all in first-rate condition, and among them the most noticeable are *O. vexillarium*, *O. Phalenopsis*, *O. Alexandræ*, *O. cordatum*, and *O. cristatum*. These are arranged with small plants of *Adiantum cuneatum* and *gracillimum*, the general appearance being most elegant and pleasing. The second prize in this class was won by Mr. Heims, gardener to F. A. Philbrick, Esq., 26, Avenue Road, Regent's Park, with a group of small but fresh plants, and very attractive.

STOVE AND GREENHOUSE PLANTS.—These are well represented, and the specimens generally are uncommonly fresh and vigorous, and the colours bright. Some of the specimens are also bearing a profusion of flowers, although the majority of the Azaleas are somewhat deficient in number of flowers. The most important class is that for twelve distinct species and varieties, and in this there are four exhibitors, all staging collections of healthy specimens. The chief honours are obtained by Mr. Tudgy, gardener to J. F. G. Williams, Esq., Henwick Grange, Worcester, who sent very even and handsome specimens, among which the following are especially noticeable—*Pimelea decussata*, over 4 feet in diameter, vigorous and profusely flowered; *Dracophyllum gracile*, similar in size, a handsome symmetrical plant; *Erica vestricosa* magnifica in fine condition, the flowers not being, however, very numerous but of rich colour; *Erica Parmentieriana* rosea, an enormous specimen over 5 feet in diameter, very healthy but poorly flowered; *Erica elegans* is very even and neatly trained; and *Clerodendron Balfourianum*, well flowered and healthy. Messrs. J. Jackson and Son, Kingston-on-Thames, follow with a very creditable collection, well grown and fairly well flowered. The beautiful and rarely seen *Statice Butcherii* is well represented by a neat plant, the rich purple colour of the flowers being very conspicuous. *Boronia pinnata* is also noteworthy. Messrs. J. Peed & Son, Roupell Park Nurseries, Norwood Road, are awarded the third prize for a collection that contains several plants in first-rate form as regards the number and quality of the flowers. A large specimen of *Anthurium Schertzerianum* with unusually fine richly coloured spathes is very attractive, and formed the chief feature in the group; a moderate-size plant of *Azalea Jackson's Crimson* also being notable for the bright hue of the blooms.

In the nurserymen's class for eight specimens the chief position is occupied by Messrs. B. Peed & Son, Norbury Nurseries, Lower Streatham, among whose plants handsome specimens of *Brica Cavendishiana*, *Dracophyllum gracile*, and *Allamanda grandiflora* are deserving of notice. The *Dracophyllum* in particular is in splendid condition, nearly 6 feet in diameter, and bearing an immense number of flowers. Messrs. Jackson & Son are placed second with neat specimens that exhibit very careful training. In the corresponding class devoted to amateurs' productions Mr. Tudgey is again in the foremost position with smaller specimens than those in his other collections, but in excellent form. The beautiful *Dipladenia hybrida* has flowers of great size and rich colour, although comparatively few in numbers; and of the other specimens the best is the pretty semi-double white *Azalea Flag of Truce*. The second award of merit is obtained by Mr. Child, gardener to Mrs. Torr, Garbrand Hall, Ewell, whose plants approach those of Mr. Tudgey very closely in quality. *Azalea Iveryana* is especially fine, *Brica magnifica* and *Clerodendron Balfourianum* being also symmetrical and well flowered. The third prize is accorded to Mr. C. Rann, gardener to J. Warren, Esq., Handcross Park, Sussex. Most of the plants in this collection are remarkable for their freshness and vigour, *Statice profusa* being uncommonly attractive. There were four entries.

AZALEAS.—Three classes are devoted to Azaleas, but very few specimens are exhibited. Mr. Charles Turner, The Royal Nurseries, Slough, the only exhibitor of fifteen specimens in 12-inch pots, is awarded the chief prize for his customary neat and well-flowered plants, which are in admirable condition. The finest specimen is one of the handsome variety *Duc de Nassau*, in which the flowers are of extraordinary size, rich colour, and very abundant. Mr. Child has the only collection in the amateurs' class, and well deserved a higher award than the third prize.

ERICAS.—Several very fine collections of these plants are exhibited. Mr. Tudgey had the best eight specimens, all very neat and healthy, but none calling for special comment except *Brica Cavendishiana*, profusely flowered and of good colour. Messrs. Jackson & Son are second with a neat collection; and Messrs. B. Peed & Son were accorded the third prize for a collection of moderate quality, a plant of *Brica ventricosa magnifica* being the most remarkable.

PRIMULAS.—Although these are not very numerous the specimens exhibited are of great merit, and constitute a most attractive group on one side of the marquee. The two classes devoted to nine Show and Fancy varieties respectively were both open, but the competitors were not so numerous as might have been expected. For nine Show varieties in pots not exceeding 8 inches in diameter, Mr. Wiggins, gardener to H. Little, Esq., Hillingdon Place, Uxbridge, holds the premier position, his specimens being characterised by the usual freshness. The blooms are large and the colour remarkably fine. *Hermit* is very attractive; *Prince Leopold* uncommonly bright; *Claribel*, chaste, and bearing a large number of flowers; *Rob Roy*, excellent; *Princess of Denmark* and *Hebe*, also fine. Mr. C. Turner follows with a smaller specimen but equally fresh and bright, the handsome variety *Prince Leopold* being still better represented than in Mr. Little's group. Messrs. J. Peed & Son taking the third place with small plants. In the corresponding class for Fancy varieties Mr. Little is again first with the only collection that is staged. These plants are in most vigorous health and well flowered, *Ellen Beck* and *Lady* being unusually fine.

ROSES.—The only exhibitors of Roses in pots from nurserymen are Messrs. Paul & Son of Cheshunt, who have two handsome collections, which form a large semicircular group at the east end of the marquee. The nine large specimens are in fine condition, the flowers being generally of good substance and the colours bright. The most noteworthy are *Marie Rady*, excellent colour; *Anna Alexieff*, well flowered; and *Madame Therese Levet*, flowers of good form. The central specimen of *Celine Forester* is rather bare at the lower part. The collection of twenty small plants is extremely good, a fine selection of varieties being admirably represented. The flowers are large, of bright colour, and abundant. Only two collections of six plants in pots from amateurs are exhibited, and of these that from G. P. Hawtrej, Esq., of Aldin House, Slough, was accorded the first prize. They are in excellent condition considering the unfavourable season, the foliage being extremely vigorous, and the blooms of fine size and substance. The best varieties represented are *Edouard Morren*, *Hippolyte Jamin*, *Juno*, and *François Treyve*. Mr. Tranter, Upper Assenden, Henley-on-Thames, follows with smaller but good plants.

BEGONIAS.—In the class for a group of Tuberous Begonias there are three exhibitors, Messrs. John Laing & Co., Forest Hill, occupying the chief position with very handsome plants representing all the best varieties in commerce. A large number of unnamed seedlings of unusual merit are also shown. The best of the varieties are *Devoniensis*, J. W. Ferrand, *Madame Hunnebell*, Mrs. Laing (fine white), *Colstonii*, and *Countess of Rosslyn* (very large, pale pink). This very handsome group attracted great attention. Mr. H. Coppin, nurseryman, Shirley, Croydon, follows with a collection that includes many excellent plants, W. E. Glad-

stone and *Réve d'Or* being especially noticeable. Messrs. Hooper and Co., Covent Garden, are third with a very good selection of varieties.

HERBACEOUS AND ALPINE PLANTS.—The two groups of these plants were greatly admired, as hardy plants invariably are. Messrs. Osborn & Sons, Fulham, hold the chief position with a handsome collection. The most attractive of the numerous plants shown being the following:—*Saxifraga nepalensis* with immense panicles of its white flowers; *Veronica neglecta* with long spikes of purplish blue flowers; *Verbascum phoeniceum*, a very beautiful form with dark purple blooms closely set on the stem; *Erigeron philadelphicus*, a pretty little Composite with pink capitula; *Iris acuta*, with pretty pale purplish blue flowers; and *Hemerocallis flava*, the yellow Day Lily. Mr. J. Douglas, gardener to F. Whitbourn, Esq., Loxford Hall, Ilford, is second with a very tastefully arranged group, in which superb *Aquilegias* predominate; *Lupinus bicolor* and *Meconopsis nepalensis* are also very noticeable. This group, though far more effective and elegant than the other, contained less variety.

FINE-FOLIAGE PLANTS.—The display of these plants is not quite so extensive as usual, but the specimens exhibited are extremely fine. Mr. Rann occupies the chief position with grand specimens. *Cycas revoluta* is magnificent, *Croton variegatus* finely coloured, *Croton Andreanus* handsome, and *C. interruptus* very fine. Mr. Tudgey follows with good plants, the specimen of *Cycas revoluta* being but little inferior to Mr. Rann's specimen. Mr. Penfold, gardener to the Rev. Canon Bridges, is third with a good collection, in which *Croton Hendersoni* is very fine.

FERNS.—The competition in the amateurs' class for these plants was very close and good, no less than seven collections being staged. Mr. Rann was adjudged the premier award for enormous plants, of which *Davallia Mooreana* and *Gleichenia Mendellii* are in excellent health. *Gleichenia microphylla* is 6 or 7 feet in diameter, but not very fresh or vigorous. Mr. Hudson, gardener to H. J. Atkinson, Esq., Gunnersbury House, Acton, was placed second with a collection that is nearly equal to the first in merit, all the plants being in the most vigorous health and as fresh as could be desired. *Thamopteris australasica* is of enormous size, some of the fronds exceeding 6 feet in length and nearly a foot in breadth. *Dicksonia antarctica* is in fine condition, and *Davallia bullata* is also very fresh and well grown. Mr. Child is third, his collection including a handsome *Todea superba* and *Microlepia hirta cristata*, both good specimens growing most vigorously. In the corresponding nurserymen's class Mr. B. S. Williams is the only exhibitor, and was adjudged the premier prize for handsome examples of *Adiantum gracillimum*, *Gleichenia flabellata*, *G. Mendellii*, and *Dicksonia antarctica*.

GROUPS OF PLANTS.—The groups, as is usual, contributed very largely to the brilliant appearance of the Exhibition. They occupy various positions in the large marquee, and a portion of one side in the long tent. In the open class for a group of plants to occupy a space of 800 square feet, Mr. B. S. Williams was awarded the premier prize for a handsome collection of Orchids and miscellaneous plants that are arranged on one of the mounds in the large tent. Fine clumps of *Epidendrum vitellinum* are especially noticeable; *Masdevallias* are numerous, with fine specimens of *Anthurium Schotzerianum* and many other beautiful plants from the Holloway nurseries. The arrangement is very tasteful, and the group is greatly admired by the visitors. This is the only collection in the open class for plants in flower, the majority of the groups shown being either in the class for miscellaneous plants or that for fine-foliaged plants alone.

The open class for groups of miscellaneous plants is remarkably well filled, no less than seven collections being staged, all possessing more than ordinary merit. The premier award was adjudged to Mr. A. Blake, Britannia Road, Fulham, for a novel arrangement of Ferns, somewhat in the style of a miniature fernery. The Judges evidently experienced a difficulty in deciding upon this award, and many visitors were of the opinion that the exhibit referred to was not of such a character as entitled it to rank as a group in the ordinary acceptance of the term, and that its merit would have been more justly recognised by an extra prize, the class prizes being distributed among the other exhibitors. Messrs. John Laing & Co., Forest Hill, occupy the second position with a large group. Ferns, Palms, Crotons, &c., are lightly and pleasingly arranged, and margined with *Calceolarias*, *Gloxinias*, *Ericas*, and Tuberous Begonias. This group is very meritorious, being only slightly deficient in colour. Mr. J. Ford, gardener to E. O. Coope, Esq., The Rocketts, Brentwood, was accorded the third prize for a large and bright group, of which the only defect is its somewhat crowded appearance. It contains a large number of flowering and fine-foliage plants, *Ixoras*, *Heaths*, *Crotons*, and Ferns forming the bulk of the groups. Mr. Aldous, florist, Gloucester Road, has an extensive and pretty group. Variegated Maples, *Liliums*, *Hydrangeas*, and *Spiraeas* are arranged in an agreeable manner, and an equal third prize was accorded for it. The three other contributions in this class are also very attractive; and since groups appear to be so popular it would be perhaps advisable to award a few additional prizes. Mr. J. R. Bird, gardener to J. A. Canston, Esq., Lodgemore, Alleyn Park, Dulwich

has a tastefully arranged and elegant group, in which his fine standard Mignonette have attracted much attention; and Mr. Rann has also a bright collection of plants.

The groups consisting exclusively of fine-foliage plants, arranged in a similar space to the other groups—namely, 800 square feet, are also numerous, five exhibitors having entered in competition. Messrs. Hooper & Co., Covent Garden, obtained the chief award for a handsome group, which contains some very fine specimens. Mr. Hudson follows with one of his tasteful arrangements, which are invariably greatly admired. In the centre is a specimen of *Alocasia metallica* in admirable condition. Mr. Rann takes the third position with good plants, but not so tastefully arranged. Mr. Penfold and Messrs. Osborn have also collections of considerable merit.

NEW PLANTS.—In the class for twelve new plants not in commerce Mr. William Bull was adjudged first honours with the following specimens in grand condition:—*Adiantum aneitense*, very elegant; *Aralia elegantissima*, a noble plant; *Dieffenbachia rex*, fine well-marked foliage; *D. regina*, marbled with green and white; *Rhopaloblasta princeps*, a most elegant Palm resembling a *Dæmonorops*; *Vriesea Falkenbergii*, a striking curiosity with coral red bracts tipped with pinkish white that attracts much notice; *Spiraea Aruncus astilboides*, a mass of snow-white plumes, and chastely beautiful; *Croton insignis*, like an enlarged *C. Queen Victoria*; *Illicium religiosum variegatum*, somewhat resembling *Eurya latifolia*, but much clearer in the markings; *Anthurium insigne*; *Davallia sjiensis*, and *Selaginella involvens variegata*. Mr. B. S. Williams follows with *Alsophila tomentosa*, very elegant; *Coccoloba Baptisti*; *Aralia nobilis*, an imposing plant; *Croton Dodgsoni*, very bright with narrow leaves; *C. Rodeckianus*, bright and drooping; *Wallichia zebrina*; *Nepenthes Dormanniana*; *Dracaena Mrs. Turner*, green and white; *Sansevieria aurea marginata*; *Calamus densus*, an elegant Palm; *Dieffenbachia latimaculata*, and *Asplenium Baptisti*, a most distinct Fern with very dark and elegant fronds. In the other class for new plants—namely, for those sent out since 1877, Mr. W. Bull is again first with a handsome collection, which included such fine plants as *Philodendron Carderi*, with velvety cordate leaves shaded with dark and light green; *Juncus zebrinus*, the zebra-striped Rush; *Thrinax barbadensis*, a neat fan-leaved Palm; *Dieffenbachia Leopoldi*, leaves bright green, the midrib of which is white and prominent; *Ceratostamia fusco-viridis*, a very distinct Cycad with pinnate shiny green leaves; *Oncidium Gardnerianum*, very pretty, flowers marked with yellow and brown; *Cyphomandra argentea* has elliptical silvery leaves with bright green veins, and *Sarracenia atro-sanguinea*, a beautiful form of the Side-saddle Flower. The others were *Enccephalartos Frederici-Guilielmi*, *Gymnotheca Radiana*, and *Plectocoma himalayana*, an elegant pinnate-leaved Palm. Mr. Rann is second in this class with a good selection of new plants in excellent condition.

MR. BULL'S PRIZES.—Some very fine examples of culture and many beautiful plants are staged. In class A (private growers), for plants introduced since the beginning of 1877, the first prize and cup was awarded to Mr. Rann, gardener to J. Warren, Esq., Handcross Park, Sussex, with splendidly grown examples of *Croton Williamsii*, *C. princeps*, *C. Challenger*, *C. Hendersoni*, *C. roseus pictus*, *Kentia Wendlandiana*, *Dracaena Goldieana*, *Lomaria Dalgairnsie*, *Panax lacinated*, *Dracaena vivicans*, and *Aralia filicifolia*. The second prize was obtained by Mr. Penfold, who exhibited fine specimens of *Davidsonia pruriens*, *Calyptrocoma Swartzii*, *Dracaena vivicans*, *Alocasia Johnstoni*, and *Kentia Wendlandiana*. In the corresponding nurserymen's class Mr. B. S. Williams is the only exhibitor, and has obtained the chief silver cup with specimens of the following in addition to those already enumerated—*Dracaena Robinsoniana*, *Cibotium pruinatum*, *Croton Williamsii*, *Lastrea aristata variegata*, and *Lomaria Dalgairnsie*.

The silver cup in Class C, for private growers not having previously won any of Mr. Bull's cups, was won by Mr. Selway, gardener to Sir J. H. H. Amory, Bart., M.P., Knightsayes, Tiverton, with a well-selected assortment of finely grown plants. The second prize was obtained by Mr. J. McIntyre, gardener to Mrs. G. Pease, Woodside, Darlington, for specimens of the following that were not included in the other collections—*Curmeria Wallisi*, *Croton princeps*, and *Aralia gracillima*. In the corresponding nurserymen's class Messrs. Osborn & Son, Fulham, were awarded the chief prize for the only collection staged. In addition to those already noticed *Asparagus falcatus* and *Carludovica Drudei* are especially noteworthy.

MISCELLANEOUS EXHIBITS.

These are extremely numerous and interesting, the extensive and handsome groups of plants exhibited by the various nurserymen contributing an important attraction to the Show. One of the most noticeable of the groups in the marquee is the grand collection of *Dracaenas* from the General Horticultural Company. This handsome group is margined with *Gloxinias* and *Adiantums*, and well merits the gold medal that was awarded for it, a similar recognition being accorded to Messrs. James Carter and Co., High Holborn, for a most extensive collection of *Coleuses* and other plants. Among the *Coleuses* all the fine new varieties

that this firm has obtained are well represented. A gold medal was also awarded for the handsome group of new and rare plants from Mr. W. Bull, which occupies a large portion of one of the banks, and includes examples of his best introductions. *Sarracenias*, *Dracaenas*, &c., are well represented. Specimens of new varieties of *Coleuses*, extremely bright and fresh, are noticeable. *Spiraea Aruncus astilboides*, *Blandfordia princeps*, *Hemanthus Kalbreyeri*, together with a cluster of *Epidendrum vitellinum*, are some of the most noteworthy features of the group, which is one of the brightest and most interesting in the Exhibition.

Mr. J. James, gardener to Mrs. Watson, Redles, Isleworth, has a handsome group of *Calceolarias*, for which a silver Flora medal was awarded. These plants are extremely fine, being dwarf and compact in habit, the flowers very numerous, large, and richly coloured. Messrs. W. Outbush & Son, Highgate, were awarded a silver Banksian medal for a tasteful and attractive collection of plants, including chiefly *Heaths*, *Palms*, *Ferns*, *Statice*, and pans of *Pansies*. A collection of uncommonly handsome *Calceolarias* and *Gloxinias* is exhibited by Mr. W. Rapley, gardener to J. Brand, Esq., Bedford Hill House, Balham. The *Calceolarias* are especially noteworthy for their good habit and fine flowers. A silver medal was accorded for this exhibit. Messrs. F. & A. Smith, Park Road, West Dulwich, contribute a group of seedling *Pelargoniums*, including many varieties of great merit. A bronze medal was awarded. Mr. Aldous sent some well-grown *Mignonettes* in 48-size pots, the plants being very dwarf and sturdy, and also table decorations, the flowers, &c., being arranged in gold-coloured trays and baskets of various sizes and depths, which the lady visitors greatly admired. A silver-gilt Flora medal was awarded for Mr. Aldous's contribution.

A silver Flora medal was awarded to Messrs. Kelway & Son for a collection of *Pyrethrum* blooms, very fine. A silver Banksian medal was awarded to Mr. Pearson, Chilwell, for a collection of *Pelargoniums*; and a vote of thanks to Mr. A. Parmley, 19, Bankside, S.W., for elegant bridal and ball bouquets. A silver-gilt Banksian medal was obtained by Messrs. H. Lane & Son, Great Berkhampstead, for a group of pyramidal *Ivies*. Mr. B. S. Williams was adjudged a silver Flora medal for a group of plants, among which a fine plant of *Coleus Miss Rosina* is noticeable, with neat leaves, yellow flaked with crimson. A silver Banksian medal was accorded to Mr. Boller for groups of succulent plants; and votes of thanks to Messrs. Dobson & Sons, Isleworth, and Mr. Ford for good collections of herbaceous *Calceolarias*. From the Society's garden at Chiswick came various groups of plants, the Cape *Pelargoniums* and Tuberous *Begonias* being especially noticeable.

CUT FLOWERS.

Of these the display is not extensive, but the *Pansies* produce a rich effect, and the double *Pyrethrums* are splendid. In the class for cut blooms of not less than twenty-four *Pansies*, Mr. Hooper, Bath, was placed first with grand blooms in rich and varied colours of Show and Fancy varieties. Mr. Catley, Bath, second; and Messrs. Downie & Laird, Edinburgh, third. These collections of brilliant flowers were greatly admired, the Scotch flowers being clearly belted, and not shown on white collars as the others were. Messrs. Hooper & Co., Covent Garden, were adjudged the chief prize for a miscellaneous group of cut flowers, which embraced many varieties of *Iris*es, with *Delphiniums*, *Rockets*, *Pæonies*, *Centaureas*, *Pyrethrums*, *Aquilegias*, &c. Messrs. Osborn & Sons, Fulham, were placed second with a smaller but more varied group. Messrs. John Laing & Co. exhibited cut blooms of *Pansies* and boxes of gorgeous Tuberous *Begonias*. Messrs. Kelway and Son, The Nurseries, Langport, had a magnificent collection of double *Pyrethrums* in nearly fifty varieties, the flowers being in a great variety of colour, large, full, and fine, some of them resembling *Chrysanthemums*—the finest collection of these flowers we have ever seen exhibited.

FRUIT.

This important section of the Show attracted great attention, and deserved it, for both in extent and quality for this period of the year the display is an excellent one, many dishes being very superior, and a few only containing fruit of poor quality.

PINES.—In the class for two fruits only one pair was staged, and no award was made. Through a misapprehension in making the entry Mr. Fry, gardener to J. Baker, Esq., Haydon Hall, Eastcote Pinner, missed the first prize with good and well-ripened Queens about 4½ lbs. in weight. This exhibitor was awarded first honours in the class for single fruit of Queens with a good and well-ripened example. Mr. Bailey, gardener to T. T. Drake, Esq., Sharncliffe, Amersham, second with a rather larger fruit but not perfectly ripe; Mr. Coleman, gardener to Earl Somers, Eastnor Castle, being a close third with a smaller but well-ripened specimen. In the Smooth-leaved Cayenne class only one plant was staged by Mr. Sage, gardener to Earl Brownlow, Ashridge, and a second prize awarded. In the class for any other variety Mr. Bates, gardener to J. E. Meek, Esq., Ponlett Lodge, Twickenham, was placed first; and Mr. Breese, gardener to Mrs. Akers, Moreton Hall, Congleton, second with Charlotte Rothschild. Sixteen fruits were staged altogether.

GRAPES.—Of these there was an extensive and highly creditable

display. There are eleven exhibitors of three bunches of Black Hamburgs, eight of any other black variety, ten of Muscat of Alexandria, and fourteen of any other white variety—a total of 168 bunches.

The competition in the Black Hamburg class was very good; Mr. Lowden, gardener to F. Barnes, Esq., The Quinta, Salop, being worthily awarded first honours for full well-formed bunches, nearly 8 lbs. in weight, and good, regular-sized, and well-coloured berries. Mr. Crump, gardener to the Duke of Marlborough, Blenheim, was placed second with small bunches, but fine, black, and well-finished berries; and Mr. Edwards, gardener to Mrs. Tristram, Fowley, Liphook, Hants, third with medium-sized bunches and berries, but admirably finished. Mr. Ross, Welford Park; Mr. Woodbridge, Syon; Mr. Sage, Ashridge; and Mr. Johnstone, Bayham Abbey, exhibited well in this class.

In the class for any other black Grapes Mr. Lowden was again placed first with handsome bunches of Buckhardt's Prince, very fine and even in berry. Mr. Bolton, gardener to W. Spottiswoode, Esq., Coombe Bank, Sevenoaks, was an excellent second with Black Prince, admirably finished; and Mr. Miles, gardener to Lord Carington, Wycombe Abbey, third with remarkably well-finished examples of Muscat Hamburg. Mr. Mowbray, gardener to the Earl of Leven and Melville, Fulmer, Slough, exhibits very fine bunches of Black Prince, but not fully ripe.

In the Muscat of Alexandria class some very good bunches were staged, but all of them were not ripe. Mr. Edwards, Liphook, well won the chief position with long tapering bunches and good and well-finished berries; Mr. Coleman being an excellent second; Mr. Lowden third with good bunches and very large berries, but not fully ripe. In the class for any other white Grapes Mr. Johnstone, The Gardens, Bayham Abbey, Sussex, deservedly had the premier award with grand examples of Buckland Sweetwater, fine alike in bunch, berry, and finish. Mr. Mowbray, Fulmer Gardens, was a good second with medium-sized bunches and splendid berries in fine condition; Mr. Atkins, gardener to Col. Loyd Lindsay, Lockinge Park, Wantage, being third with fine examples of Foster's Seedling. Mr. Astlett, The Gardens, Warren Wood, Hatfield, and Mr. Iggulden, Orsett Hall, staged still finer examples of the last-named variety, but not perfectly ripe; and Mr. Edwards staged very fine Buckland Sweetwater.

PEACHES.—Fourteen dishes of splendid fruit were staged, Mr. Coleman, Eastnor Castle, being placed first with grand examples of A Bee; Mr. Bones, gardener to D. McIntosh, Esq., Havering Park, Romford, being a close second with Royal George, very fine; and Mr. Crump, gardener to the Duke of Marlborough, Blenheim, third with Barrington. Nectarines were also remarkably fine, notably the prize dishes; Mr. Miles, Wycombe Abbey, being first with Elruge, large and highly coloured; Mr. Holliday, gardener to J. Norris, Esq., Castle Hill, Bletchingley, second with Lord Napier, large but rather pale; and Mr. Nash, gardener to D. Fuller, Esq., Shoreham, Sussex, third with the same variety.

CHERRIES.—Mr. Miles was as usual in the first position with Governor Wood and Black Circassian; and Mr. Woodbridge, Syon, second with Frogmore Bigarreau and Belle d'Orleans. Mr. Miles was also first in the single dish class with Black Circassian; Mr. Austen, gardener to Sir Greville Smythe, Bart., Ashton Court, Bristol, second with Bigarreau Napoleon; and Mr. Woodbridge third with Belle d'Orleans.

MELONS.—Of these the display is a very good one, thirty-one fruits being staged. A few are small, but the majority are of good size, a few being large, and most of them apparently in excellent condition, yet one or two overripe. The first prize was awarded to Mr. Crump, gardener to the Duke of Marlborough, Blenheim, for a medium-sized oval delicately netted example of Blenheim Orange, a thin-rinded few-seeded variety of excellent flavour. Mr. T. Coomber, gardener to J. H. Rolfe, Esq., M.P., The Hendre, Monmouth, was placed second with a round and very handsome fruit of Hendre Seedling, a Melon evidently of considerable merit and high quality. Mr. Norman, gardener to the Marquis of Salisbury, Hatfield House, secured third honours with a very large fruit of Bead's Scarlet-flesh.

STRAWBERRIES.—Of these nearly thirty fine dishes were staged. In the class for three dishes Mr. Norman, gardener to the Marquis of Salisbury, Hatfield, secured first honours with Sir C. Napier, Sir J. Paxton, and President; Mr. Goldsmith, gardener to P. C. Hardwicke, Esq., Hollanden, Tonbridge, second with James Veitch (extremely large), President, and Sir J. Paxton; and Messrs. Barnwell & Tilbury, Crescent Road, Worthing, third with the same varieties as the first-prize trio. For one dish Mr. Mortimer, gardener to Major Storer, Purley Park, Reading, was placed first with President, large and remarkably well coloured; Mr. James, Redless, Isleworth, being a very close second with Sir J. Paxton; and Mr. Gibson, Halstead Place Gardens, Sevenoaks, third with equally fine fruits of the same variety, but not so well shaped.

TOMATOES.—Eleven very large and handsome dishes are exhibited, first honours being well won by Mr. Iggulden, gardener to Capt. D. Wingfield, Orsett Hall, Romford, with grand smooth examples of Stamfordian, the best we have ever seen. Mr. Crump, Blenheim, follows with an excellent dish of Hathaway's Excelsior;

Mr. Miller, gardener to J. T. Friend, Esq., Northdown, Margate, with smaller but smooth crimson fruit of Hooper's Acme.

VEGETABLES.

There was a very marked advance in the number of entries in the vegetable classes, several of the collections staged being very meritorious. In the class for ten dishes ten collections were staged. Mr. Miles as usual occupies the premier position, staging in his well-known style good examples of Asparagus, Early White Naples Onions, Snowball Turnips, Nantes Horn Carrots, Laxton's Unique Peas, Patch's Superb Cucumbers, Improved Lapstone Potatoes, Canadian Wonder Beans, Early London Cauliflowers, and Stamfordian Tomatoes. Mr. W. Iggulden, gardener to Capt. Wingfield, Orsett Hall, Romford, followed very closely with a generally excellent collection, his Trophy Tomatoes, Laxton's Unique Peas, and Woodstock Kidney Potatoes being particularly good. The third prize was awarded to Mr. W. Chettleburgh, gardener to Col. Ross, Worsted House, Norwich. This collection included rather coarse Stamfordian Tomatoes, a fine bundle of Asparagus, and well-filled pods of Oxford Tom Peas. Mr. Crump of Blenheim, and Mr. Haines, gardener to the Earl of Radnor, Coleshill, Highworth, also exhibited very creditable collections.

MESSRS. SUTTON & SONS' SPECIAL PRIZES.

In the class for four half pecks of Peas there were eight competitors. In some instances the pods were too full, in others not full enough. The best and most even lot is staged by Mr. W. Iggulden, which consists of Sutton's Bijou, Sutton's Ringleader, Laxton's Unique, and William I. The prize awarded is a silver medal and one guinea. Mr. J. S. Bellis, gardener to Major Thoys, was awarded the second prize, a bronze medal and one guinea; and the third prize was awarded to Mr. J. Clarke, gardener to Lord Hastings, Melton Constable; and the fourth to Mr. T. Lockie, gardener to Lord O. Fitzgerald, Oakley Court, Windsor. For two kinds of Melons and two kinds of Cucumbers there were six competitors, the Melons staged in nearly every instance being very good. The first prize (a gold medal) was awarded to Mr. G. Goldsmith, gardener to P. C. Hardwicke, Esq., Hollanden, Tonbridge, for well-ripened examples of Hero of Bath and Read's Hybrid Melons, and the Duke of Connaught and Sutton's Improved Telegraph Cucumbers. To Mr. T. Lockie was awarded the second prize (a silver medal and one guinea). This exhibitor staged rather better examples of the Duke of Connaught and Sutton's Improved Telegraph Cucumbers, and large but rather unripe specimens of Sutton's Royal Botanic and the Hero of Bath Melons. Mr. Crump, Blenheim, secured the third prize; and Mr. Howe, Benham Court, Newbury, the fourth.

IMPLEMENTS AND SUNDRIES.

The show of horticultural buildings, mowing machines, and other garden requisites is scarcely so extensive as usual. The first to be noticed was a well-built span-roof plant house, erected by the Messrs. Foster & Pearson, Beeston, Notts. It is a combination of wood and iron, and is very light and well ventilated on the improved lantern system. This house is rendered gay with many of the noted Chilwell varieties of Zonal Pelargoniums, and near this are two highly useful span-roof portable pits also made on a very good principle, and received the award of a medal. Mr. W. Richardson of the Meadow Foundry Company, Mansfield, arranged a great variety of iron fountains, vases, garden seats, and rollers, also an improved form of throttle valves. The advantages attending the use of this valve is, that the seat and the valve can be easily removed and repairs effected without any interference with the pipes. Messrs. Johnson Brothers & Co., 6, Waterloo Place, Pall Mall, London, exhibit examples of portable fencing, and also specimens of their methods of roof-glazing with plate glass. Mr. W. Clark, 232, Oxford Street, submit their patent grass cutters, which are made on the same principles as horse clippers, and will be useful to owners of very small gardens, and for certain positions in larger establishments. Mr. Watson, St. Alban's Nurseries, exhibits specimens of his rather novel guinea suspension boiler, which is said to be powerful, and is besides very simply constructed, and easily set or rather hung. Messrs. Waite & Huggins, London, exhibit their Excelsior mowing machines in various sizes in an improved form and received a medal. Messrs. Joseph Davis & Co., London, show a number of their new barometers. J. J. Thomas & Co., The Paddington Iron and Wire Works, have a very extensive assortment of wire flower stands, hanging baskets, aviaries, archways, garden seats, and mowing machines, all being specialties of this firm. Mr. J. C. Fox, rustic summer houses. Messrs. Weeks exhibit one of their powerful patent duplex boilers; and Messrs. Clay & Levesley and Prentice Brothers have samples of their horticultural manures. Sundry other articles, such as artificial flowers, skeletonised leaves, dinner-table decorations, &c., are on view in the Council-room and the adjoining corridor.

FRUIT COMMITTEE.—Henry Webb, Esq., in the chair. Mr. Wildsmith, gardener to Lord Eversley, Heckfield, sent a tray of President Strawberries, which were of great beauty and excellence.

A cultural commendation was awarded. Mr. Reeves, gardener to C. Hart, Esq., Lee, exhibited a dish of Apples called Linton Late-keeping, which was not considered worthy of a certificate. Mr. W. Gardiner, The Gardens, Etington Park, sent a branch of Lord Suffield Apple, studded with young fruit. Mr. Gardiner also exhibited a branch of Beaugé Apricot, showing its highly prolific character; the tree was shaded with canvas. A letter of thanks was awarded. Mr. Lyon, Sundridge Park, Kent, sent a dish of Mushrooms, to which a cultural commendation was awarded. Mr. Miles, The Gardens, Wycombe Abbey, sent a dish of a new seedling Pea raised by Mr. Laxton, called Minimum. Mr. Miles stated that the seed was sown February 17th, and the Peas were fit to gather May 25th. It was recommended to be tried at Chiswick. Mr. R. Dean, Ealing, sent a seedling Potato called Early Cluster, which was also recommended to be sent to Chiswick for trial. Mr. Sage, The Gardens, Ashridge Park, exhibited a dish of Brown Turkey Fig of great excellence both in size and quality, to which a cultural commendation was awarded. Charles Eyre, Esq., of Welford Park, Newbury, sent a fine dish of Bourgasotte Grise Fig under the name of Brown Turkey, to which a cultural commendation was awarded. Mr. Watson of St. Albans exhibited a pair of Cucumbers, which were not considered of superior merit to others in cultivation. Mr. J. Allsopp, gardener to Lord Hotham, Dalton Hall, Hull, sent a seedling Melon, a handsome scarlet-flesh fruit, but not sufficiently ripened, very promising, and it was hoped that it would be sent again. Mr. J. Chilton, The Gardens, Aston Rowant, Tetworth, sent a seedling Melon called Chilton's Hybrid Hero of Bath, a handsome-looking scarlet-flesh variety, but not sufficiently ripe, and not equal to others in cultivation. Mr. C. Howe, The Gardens, Benham Park, sent a scarlet-flesh Melon called Benham Park Gem, which was exhibited three years ago, but it was not considered equal to others in cultivation.

FLORAL COMMITTEE.—Dr. Denny in the chair. The various plants and flowers submitted to the attention of this Committee were arranged in the Council-room as usual, and included several of considerable beauty and interest. By far the most remarkable plant exhibited was a grand specimen of the handsome Orchid *Cattleya gigas* from Sir Trevor Lawrence, Bart., M.P., Burford Lodge, Dorking (gardener, Mr. Spyers). It was a single plant, growing partly on a block that was placed in a large pot, and it was considered as the finest specimen ever exhibited. The foliage was very large and vigorous, and the plant had over a dozen spikes, bearing from three to six flowers each, which were also of good size, and with richly coloured lips. A gold medal was very deservedly awarded for this extremely handsome plant. Sir T. Lawrence also showed small plants of *Odontoglossum vexillarium roseum*, the blooms being of great size and finely coloured, and a variety with pure white labellums.

Mr. W. Bull gained a first-class certificate for a specimen of the new *Spiraea Aruncus astilboides*, which is regarded as a variety of the well-known *S. Aruncus*, though resembling it but slightly in general appearance. The flowers are very closely set in long feathery panicles, and the plant will prove a valuable addition to the number of really decorative plants. Mr. W. Brown, Brent Nurseries, Hendon, was awarded a first-class certificate for a decorative *Pelargonium* named Eclipse, of compact sturdy habit, with neatly formed flowers of a bright crimson hue, the upper petals being very dark. Mr. G. Garraway, Lower Swainswick, Bath, obtained a similar award for an extremely good tricolor *Pelargonium* named Mr. G. Garraway, the leaves of which were of moderate size, round in outline, and marked with uncommonly rich shades of crimson. Mons. V. Lemoine was also adjudged a first-class certificate for a distinct and attractive Ivy-leaf *Pelargonium* named Mons. Dubois. A very attractive hybrid *Ismene* named Sulphur Queen, contributed by Col. R. T. Clarke, also received a similar recognition.

Votes of thanks were accorded to Dr. Patterson of Fairfield, Bridge of Allan, N.B., for a beautiful collection of Orchid flowers, among which *Odontoglossums*, *Oncidiums*, *Cypripediums*, and *Maadevallias* were admirably represented; to Mr. W. Hall, gardener to Mr. Stevens, Esq., Springfield, Tulsa Hill, for cut blooms of *Maréchal Niel* Rose in excellent condition; and to Mr. H. Parr, Givons Grove, Leatherhead, for a collection of Carnation blooms. Among the other exhibits were a group of hybrid *Sarracenias*, *Nepenthes*, and Japanese Maples from Messrs. J. Veitch & Sons, Chelsea; seedling Pansy blooms from Messrs. Cocker & Son, Sunny Park Nurseries, Aberdeen; some new and beautiful Tuberosus *Begonias*, and a bright blue *Lobelia* named Union Jack, from Messrs. Charles Lee & Son, Hammersmith; a fine plant of *Brassia verrucosa*, with six long spikes of flowers, from W. Roebuck, Esq., West Lodge, Acton (gardener, Mr. Ellis); and cut blooms of new *Pyrethrums* from Messrs. Kelway & Son, Langport, Somerset. These flowers were of extraordinary size, semi-globular in form, and bright in colour.

SCIENTIFIC COMMITTEE.—An Australian bug on Blackwood tree leaves, gathered at Wynbury, Cape Town, May 3rd, 1890, forwarded by W. J. Prothero, Highfield, was referred to Mr. Mac-lachlan for report. Peach blossom, apparently malformed and growing on young wood, from Mrs. Brightcoe, Stanmore, was referred to Dr. Masters for examination and report. Mr. W. G.

Smith exhibited a "pitcher leaf" of Broccoli. Dr. Masters exhibited drawings of "hose-in-hose" *Calceolarias*, caused by the conversion of stamens into slipper-like petals within the normal one. Col. Clarke exhibited flowering plants of hybrid *Ismenes*, *I. calathina* × *Eleseena longipetala*, and observed that it proved to be identical with *I. deflexa*. He also exhibited *I. amanceae* × *calathina*. Mr. Lynch exhibited a number of interesting plants growing at the Botanic Garden of Cambridge, including *Arctotis arborescens*, Jacq., from South Africa; *Cuscuta reflexa*, parasitic on *Pelargonium*; a *Pyrus coronaria*, late-flowering and Violet-scented.

VERBENAS IN POTS.

VERBENAS are not grown in flower gardens so extensively as they were twenty years ago, but they are, to use a common but expressive term, "looking up again" now. Given suitable varieties, healthy plants, and good soil, attractive beds of Verbenas may easily be had. But although they do not succeed well out of doors in many places, yet they may be grown in pots with the greatest ease, and no one can say that the finer varieties are not worthy of this mode of culture. The flowers



Fig. 66.

possess a beauty and delicacy of fragrance all their own, while the colours are most varied, ranging from pure white through all the delicate neutral tints to the deepest Tyrian purple, rich crimson, and dazzling scarlet; some also have distinct white eyes, others shaded petals, and others again are striped, but all are beautiful. The magnificent trusses that have been from time to time exhibited at the shows and meetings of the Royal Horticultural Society have commanded general admiration. Such flowers as those referred to ought to be seen in more private gardens, where it is certain they would be highly appreciated.

The chief point in the successful culture of Verbenas is to have healthy plants to begin with, to keep them clean, and grow them quickly. The plants must never become rootbound until they are placed in their flowering pots, as if the growths become hard and stunted when the plants are small they seldom prove satisfactory. The only accommodation requisite for growing Verbenas in pots is that of cold pits or frames at this season—such structures that have been emptied of the ordinary stock of bedding plants, with rather strong loam enriched with decayed manure and a sprinkling of bone dust, shifting the plants as often as the roots protrude through the drainage until they are placed in the blooming pots; burning a little tobacco paper in the frame occasionally, not to kill

insects, but to prevent their attacks; stopping the plants frequently until within six weeks of the time they are wanted to flower; watering carefully yet sufficiently, and keeping the ashes always moist on which the plants are placed; sprinkling the plants daily during the afternoons of bright weather, and afterwards drawing off the lights, exposing the plants to the night dews, and fine specimens will soon be had bearing flowers similar to the truss shown in fig. 66, which has been obtained from Mr. Cannell, and fairly represents the finer varieties. Some varieties, however, producing richly coloured and fine flowers, are not good growers; and better than submitting a list here that may be too long or too short for intending cultivators, is to advise each to state the number of plants they require in variety, stipulating that all be healthy and free growers, and a vendor cannot afford to risk his reputation by supplying those that do not possess the qualities indicated.

Well-grown specimens of *Verbenas* in pots are most valuable for the decoration of conservatories and greenhouses, where they afford a welcome change from the sometimes overpowering monotony of *Zonal Pelargoniums*. The trusses of *Verbenas*, too, are extremely suitable for vase decoration, and are always favourites with ladies, who take pleasure in adorning their rooms with cut flowers; at least this is the experience of—**AN OLD GROWER.**

DESTROYING THE GOOSEBERRY CATERPILLAR.

To destroy these the following preparation is employed:—2 ozs. of white hellebore powder and 2 oss. of quassia chips are placed in a two-gallon stone jar, which is filled with boiling water, corked, and allowed to stand twenty-four hours. Before using it shake the bottle well, pour some of the liquid into a bucket or basin, and with an old whitewash brush sprinkle the mixture over the bushes as soon as the caterpillars are observed. I have never known this to fail when properly applied, but it is of no use when the caterpillars have been allowed to strip the bushes of their leaves. Then the only remedy is to remove the soil 3 inches deep around the bushes and mix it with fresh lime; or, better still, to bake or char it, placing fresh soil around the bushes, and employing the charred soil for other purposes.

I find the "hellebore tea" a most useful application to Rose trees and other plants attacked by green fly, caterpillars, or other similar vermin. To be successful, however, the hellebore powder and the quassia chips must be fresh.—**G. O. S.**

In reply to the inquiry of your correspondent, Mr. Wm. Haslam, on making hellebore tea for destroying caterpillars, I mix two ounces of hellebore powder to the gallon of water. I find the best way to mix it is to use sufficient hot water to make it into the consistency of cream, adding cold afterwards. I water the Gooseberry trees with an ordinary rose watering can, and I only do it on a bright day to allow the powder to dry on the leaves.—**BATARD.**

NEW AND CHOICE PLANTS.—No. 1.

So many new plants are distributed from time to time that their number must bewilder some cultivators who cannot grow them all, and who desire to make a selection. As there are many such persons residing in the country who cannot see the plants recommended to their notice it may be useful to describe a few that have come under my observation; but at the same time it is well to remember that at least some of those I have not seen may be equal in merit to the plants I shall refer to. I do not intend to follow any precise order in these notes, but simply to jot them down as they occur to me; neither do I confine myself to those plants that are being sent out this year for the first time, as many which were introduced to commerce during the past two or three years are still comparatively little known. Those will be principally noticed that possess characters specially fitting them for purposes of decoration, but there are a few which will deserve attention, more from peculiarity of structure than beauty.

CROTON WARRENI (Williams).—Notwithstanding the large number of *Crotons* already in cultivation this one is undoubtedly a grand addition, and may justly be considered as entitled to take position among the finest of the genus. The leaves are rarely more than 1½ inch broad, but are frequently nearly 2 feet in length, spirally twisted, and elegantly drooping. The colours are unusually bright and distinct; crimson, green, and various shades of yellow being irregularly combined in the leaves, the tints being especially rich in the old foliage. The

habit of the plant is free and robust, and altogether it is certainly of great merit.

BURBIDGEA NITIDA (Veitch).—This plant, which is named in honour of Mr. Burbidge, is one of those that he discovered while travelling in Borneo, where it inhabits shady forests over 1000 feet above sea level, and it has been considered so distinct in character as to constitute a new genus. In habit it is suggestive of the *Hedychiums* and *Alpinias* to which it is allied, and when bearing several panicles of rich orange-coloured flowers its beauty and value as a stove plant is seen to be of no mean order. The leaves, too, are of such a fine bright shining green colour as to considerably heighten the effect of the flowers. A moist stove and a moderately light rich soil suit it admirably.

FIGUS EXCULPTA (Bull).—Although this species has been in commerce several years it is by no means so well known as it deserves to be, for of all the numerous *Ficus*es few, if any, can surpass it in elegance. The dark green leaves are irregularly and deeply lobed, the margins being very prettily sinuated, imparting a most distinct appearance to the plant. As a fine-foliage plant it is admirably adapted for decorative purposes, especially in a small state.

POTHOS OELATOCALLES (Veitch).—This is another of Mr. Burbidge's introductions, and although not particularly beautiful, it will probably prove useful for training over walls and similar surfaces in stoves, for which its peculiar style of growth especially adapts it. The leaves are elliptical in form, and with the stem grow quite flat on any even surface. The plant so nearly resembles some of the *Marcgravias* that it would form a very appropriate additional comparison for Mr. Leo Grindon's work, "Echoes of Plant Life."

AZALEA MRS. GERARD LEIGH (Williams).—The beautiful *Azaleas* that Mr. Carmichael was so successful in obtaining by crossing the varieties *Stella* and *Flag* of Truce with *amœna* are now well known and justly appreciated. Another handsome form of similar parentage is being sent out under the above name, and is likely to become one of the best for decorative purposes. The flowers are individually larger than in the other allied forms, while the trusses are also of considerable size and very freely produced. The colour is a rich rosy crimson, very bright and attractive. For yielding a supply of cut flowers this variety will be most valuable, and in very moderate heat it may be induced to flower from November onwards into spring.—**R. L.**

WHAT IS THE BEST FORM FOR A FRUIT TREE?

EXPEDIENCY, fancy, fashion, have each exercised an influence upon the various methods of training trees in gardens, an influence that has not always proved conducive to the desired end, which undoubtedly is the production of the greatest possible quantity of fine fruit in a given space. The symmetrical cone-like pyramid, the goblet-shaped bush, the fan-trained, horizontal, or vertical wall or espalier tree have all been warmly advocated, and probably more frequently from the promptings of fancy or individual taste than from any real superiority of one form over another. Yet the matter is quite plain, for whatever be the form, yet taken in detail, it resolves itself into a series of branches, each sufficiently well furnished with spurs upon which the fruit is borne. It may be well to state clearly that the Peach, Nectarine, Morello Cherry, and Fig are not referred to here. Plums, Cherries, Pears, Apples, and I may add such bush fruits as Red and White Currants and Gooseberries, all fruits for every garden, are those in question as being of the greatest general utility.

Now, it is undoubtedly correct to term every "spurred" branch of a fruit tree a cordon, and judging from my experience and from what I have seen in various gardens it appears worthy of serious consideration whether the use of single cordons, each a distinct tree trained diagonally, ought not to be extended very considerably. Certainly it seems to me that more can be proved in favour of this than of any other form—economy of space both for root and branch; the decided tendency to yield good fruit at an early stage of its existence; the ease of adaptation to any position, any space confined or extensive; the facility for protection of blossom or fruit; for culture especially as regards pruning and training; the greater variety of fruit that may be had; and above all the greater certainty of obtaining a regular seasonable supply of fruit year by year, and not a fitful superabundance one year and a tantalising scarcity for two or three.

That the fruit of cordons is equal to any other in size and

general excellence we have already had ample proof. Let it be clearly understood that I do not advocate any such toys as low marginal horizontal cordons, but diagonal cordons trained to walls, fences, or strained wires 8 or 10 feet high at an angle of 45°, and planted 18 inches apart.—EDWARD LUCKHURST.

NOTES AND GLEANINGS.

At a general meeting of the ROYAL HORTICULTURAL SOCIETY, held on Tuesday last, Sir Charles Strickland, Bart., in the chair, the following candidates were elected Fellows of the Society:—J. Ayres, Mrs. Begley, Richard Blackwood, Wm. Blake, Mrs. Bourne, Capt. C. H. Bunbury, R. H. Collins, Mrs. Illingworth, Mrs. Laura Kelly, Mrs. Sely, A. Leon, Mrs. A. M. Lucena, Geo. A. Macmillan, Miss Grant Morris, Miss E. J. Read, Wm. Roebuck, John N. Rogers, Mrs. Sendall, Lady Maria Spearman, Robert Whyte.

THE PELARGONIUM SOCIETY'S EXHIBITION, which will be held at South Kensington on Tuesday, June 29th, promises to be an excellent one, for the Pelargonium is more extensively cultivated than ever, and the aims of the Society are now fully understood and appreciated. We are desired by the Executive Committee to intimate to intending competitors that the staging of plants should be completed as early as possible on the morning of the 29th, in order to allow time for the judging in the classes and the subsequent awarding of certificates to new varieties before the public are admitted. In the case of seedling Pelargoniums not likely to be in condition for judging on the 29th, special arrangements will be made for adjudicating on their merits at the Floral meetings of June 22nd and July 13th, but intending exhibitors must give notice on forms which may be obtained from the Honorary Secretary. In connection with the Exhibition on the 29th Mr. Shirley Hibberd will give a brief lecture on Pelargoniums in the Council chamber at 3 P.M.

A SPECIAL dinner was held at the HORTICULTURAL CLUB on Tuesday evening, which was one of the most successful that has as yet been held. Between thirty and forty members and their friends were present. The chair was occupied by Mr. John Lee, who was supported by the Hon. and Rev. J. T. Boscawen, Dr. Hogg, Dr. Masters; Messrs. Veitch, Adams, Osborn, Turner, Whaldron, Hawtreys, Deal, G. Paul, Rivers, Cutbush, Prince, &c. Amongst the visitors were Messrs. Henry & Maurice Vilmorin of Paris, Mr. Barron of Elvaston, Mr. Rutland, and Mr. Sewell. According to the rules of the Club no toasts are proposed at these meetings except that of the visitors, which was given in excellent terms by the Chairman, and responded to by Mons. Henry Vilmorin and Mr. Barron. A very pleasant evening was spent, and all expressed themselves highly pleased with the arrangements of the Club.

AN extremely attractive plant is the handsome BLANDFORDIA PRINCEPS which is now flowering freely in Mr. W. Bull's nursery at Chelsea. This species is the finest of the genus, and is one of the very numerous Lily allies that are so valuable for greenhouse and conservatory decoration. The flowers are about 3 inches in length, tubular, of a rich orange red colour externally, and bright yellow within, the lobes being also yellow. The flowers are borne on tall scapes, are closely arranged near the summit, and are slightly pendulous. The leaves are long, narrow, and bright green, being disposed of in a two-ranked manner. Like others of the genus the plant is easy of culture, and its bright heads of flowers are highly imposing either singly or in combination with others.

A CORRESPONDENT writing to us on ROSES AND THE FROST states that the plants have suffered less in the Waltham Cross Nurseries than in any gardens he has visited, and he thinks it may interest our readers to know that Mr. William Paul accounts for the circumstance as follows:—"Before and during the night of the severest frost, on the 7th December, the shoots were encased in icicles—not clear icicles, but icicles composed of rain and smoky fog—opaque icicles which acted as snow does in protecting from frost." It has been suggested that these icicles intensified the mischief. But would it be so even if they were formed of clear water? Mr. Paul thinks not, although opaque icicles if pre-existing would probably afford more protection from intense cold.

IN Mr. B. S. Williams' nursery, Upper Holloway, the large collection of ANACROCHILIS is now very attractive. The species and varieties are very numerous, all the most handsome and distinct forms known being represented. These beautiful

little Orchids are usually considered difficult of culture, but that does not appear to be the case with Mr. Williams' plants, which are growing vigorously, the colours and markings on the foliage being uncommonly bright. The collection is one of the most complete in cultivation, and includes with *Goodyera* about twenty distinct forms. Some of those that are especially noticeable for their beauty are *Anacrochilus setaceus*, with its varieties *cordatus* and *grandifolius*, *A. zebrina*, *A. petala* and variety *cupreus*, *A. Lowi*, *A. Rollissoni*, *A. Lobbi*, *A. Reinwardtii*, *A. intermedia*, and *A. Dawsoniana*.

OUR correspondent "T. E." informs us that on Wednesday, the 2nd inst., the members of the MANCHESTER BOTANISTS' ASSOCIATION visited the garden of William Brockbank, Esq., of Didsbury, near Manchester, to inspect his fine collection of herbaceous and alpine plants, which comprises about eight hundred species and varieties. Mr. Brockbank conducted his visitors round the garden and pointed out the most noteworthy plants, and altogether the excursion proved most enjoyable. We shall shortly publish some notes on this interesting garden.

THE Rev. O. Fisher's manual entitled "THE ART OF GROWING ROSES OUT OF DOORS," has reached a fourth edition. The various details of the art are plainly described by one who has practised them all, and the instructions given cannot fail being useful to those who know little about Roses and their culture. As is stated in the preface, "For professed gardeners these lines are not intended, nor yet for him who is the master (or servant) of a professed gardener; but for that not less happy being, who, with a man and a boy under him, keeps a horse, a couple of cows, and a dozen pigs, and looks after his Roses himself." The requirements of the class represented by that "being" are kept well in view throughout the pamphlet, which is published by Messrs. Bradbury, Agnew, and Co., Bouverie Street, London.

THE WIMBLEDON HORTICULTURAL SOCIETY will hold their annual Exhibition in the grounds of Belvedere House, Wimbledon, on July the 7th. A number of special prizes will be offered by various gentlemen in the neighbourhood.

WE regret to record the death of M. JEAN NUYTENS VERSCHAFFELT, who died on the 30th ult., at the age of forty-four. This gentleman was the proprietor of the well-known nursery at Ghent, which he previously managed for his uncle the late M. Jean Verschaffelt, by whom he was adopted. M. Nuytens Verschaffelt was of an extremely genial disposition, and invariably gave to all English visitors a most hearty welcome.

IN the Edinburgh Botanic Garden a plant of RHEUM NOBILE, OR SIKKIM RHUBARB, has recently flowered, and is believed by Mr. Sadler to be the first specimen of the plant that has flowered in Europe. It was grown in the open border without any protection, from seeds received from Dr. King of the Calcutta Botanic Gardens about seven years ago. Its height is about 2 feet, the bracts being straw-coloured. It is to be figured in the Edinburgh Botanical Society's "Transactions." The plant has been also grown at Kew, but not very successfully, as the seedlings have generally died off after producing a few leaves.

A CORRESPONDENT writes as follows on TRANSPLANTING MIGNONETTE:—"I have always found it worthless for this purpose when raised under glass or in rich soil in a shaded position; but if the seed is sown thinly in prepared loam full in the sun, and the seedlings are transplanted immediately they can be handled, they succeed very well. Grown as indicated they assume a stocky growth and produce more fibrous roots than when raised in a shaded position."

WE learn that RHODODENDRONS are flowering well near Liverpool, and quite equal to the expectations formed last autumn, when the plants started into a second growth owing to the excessive rain and dull weather. But the east winds have injured the flowers considerably, and have rendered the foliage brown and unsightly, doing much more damage than the severe weather of the past winter.

FINE displays of RHODODENDRONS are now on view at the Royal Botanic Society's Garden, Regent's Park, and in Cadogan Place, Chelsea, London.

AT the Ordinary Meeting of the METEOROLOGICAL SOCIETY to be held at 25, Great George Street, Westminster, on Wednesday, the 16th inst., at 7 P.M., the following papers will be read:—"Ozone in Nature, its Relations, Sources, and Influences, &c.," by J. Mulvaney, M.D., R.N.; "The Average Height of the Barometer in London," by Henry Stokes Eaton, M.A., F.M.S.; "Note on a Waterspout Observed at Morant

Cays, Jamaica, March 23rd, 1880," by Lieut. Alfred Carpenter, R.N., F.M.S.; "Account of a Balloon Ascent in a Whirlwind, March 23rd, 1880," by Capt. James Templer; "Results of Meteorological Observations made at Stanley, Falkland Islands, 1875-77," by William Marriott, F.M.S.; "A New Thermograph," by William David Bowkett. For exhibition, Winstanley's air thermometer.

ARISTOLOCHIA GOLDIEANA.

SINCE the publication of Mr. Castle's graphic description of

this remarkable plant on page 413, we have been requested by several of our readers to give an illustration of the flower. The plant referred to has produced another flower since it was described on the page indicated, but our engraving is taken from a splendid coloured figure in the "Botanical Magazine," tab. 5672, where, however, the stalk of the flower is not shown, as it was in the flower produced at Kew, in which it turned downwards as represented in fig. 67. The engraving is necessarily greatly reduced, being about one-fourth the real size of the flower; but it is very faithful, and shows the strange form and peculiar markings admirably. Both the flowers that were

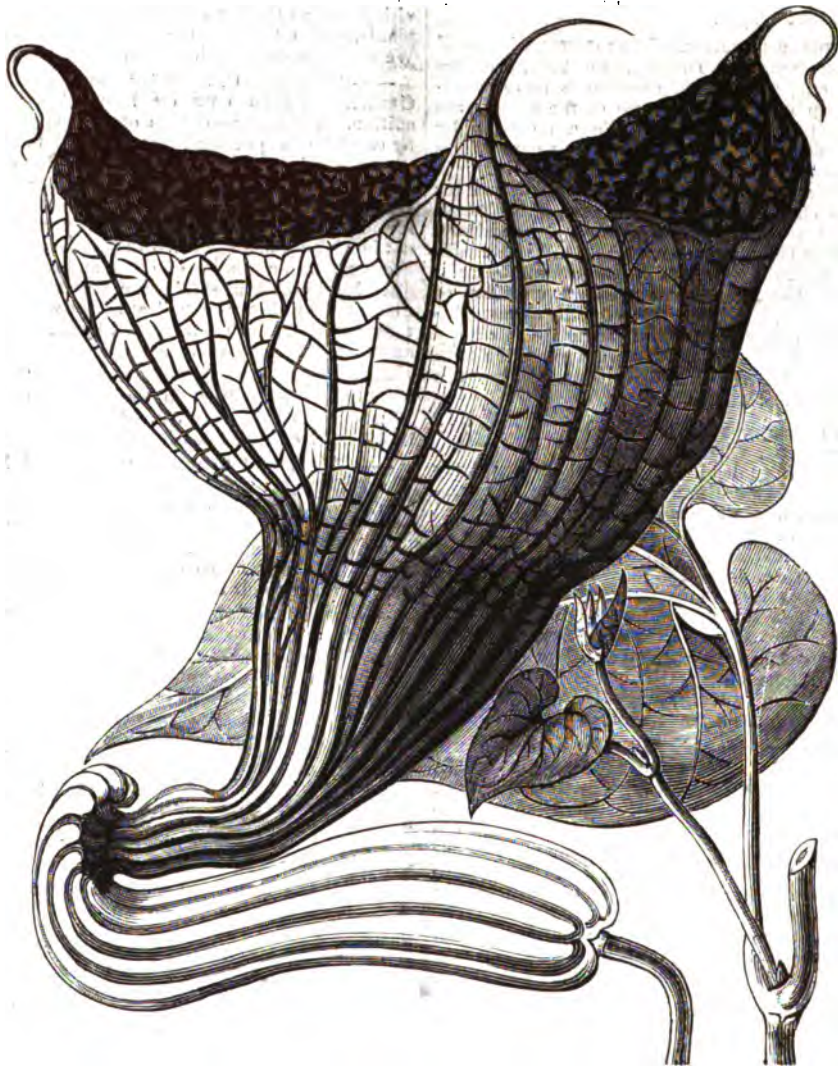


Fig. 67.—ARISTOLOCHIA GOLDIEANA.

produced by the plant at Kew have been preserved; and so, although very few persons had the opportunity of seeing them when growing, many will be able to gratify their curiosity by observing the specimens in the museum. The second flower was much smaller than the first, and was only in its best condition for thirty-six hours, when it was found necessary to remove it. The larger was about 13 inches in diameter across the mouth of the funnel-shaped corolla, and 30 inches in length following the bends of the tube. Therefore, both in

size and form this flower is justly entitled to rank among the most remarkable that are known.

PEPEROMIA PROSTRATA.

THIS beautiful plant is, as the engraving indicates, admirably adapted for basket culture, and the specimen in Mr. B. S. Williams's nursery from which the drawing was taken has been greatly admired by all who have seen it. The leaves are

round, thick, and fleshy, variegated with light and dark shades of green and a brownish tinge. They are borne on long slender stems, which appear to the best advantage when pendulous over the sides of a basket suspended from the roof of a house. It is of easy culture, simply requiring a soil composed of turf, peat, and sand, and an ordinary stove temperature, where it

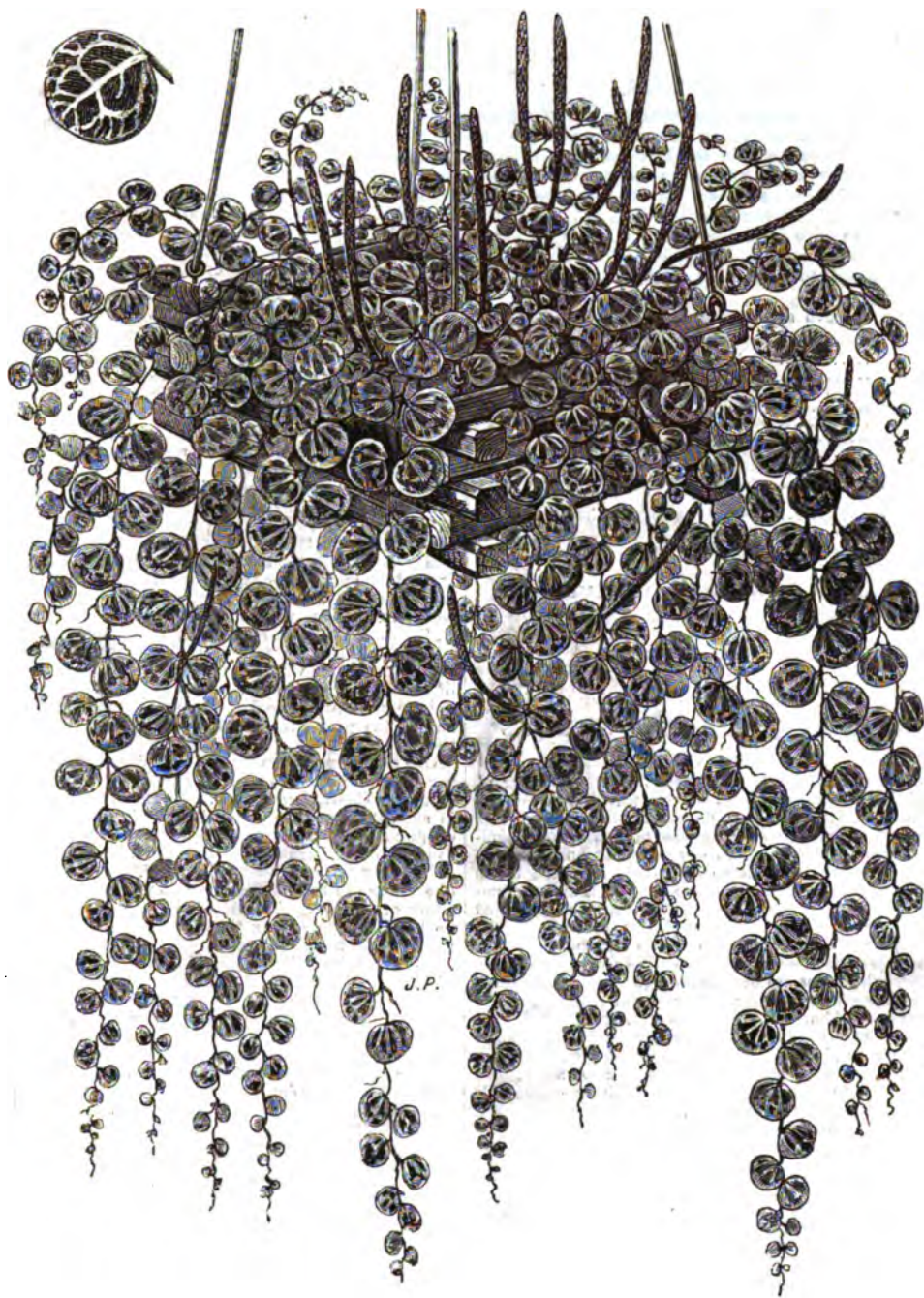


Fig. 68.—*PEPEROMIA PROSTRATA*.

grows rapidly, and may be readily increased by pegging small portions of the stems down on the soil.

OUTDOOR PEACH CULTURE IN IRELAND.—"Out of 120 Peach and Nectarine trees out of doors I do not expect two

dozen fruit," says Mr. W. F. Radclyffe, page 410, and this from sunny and salubrious Dorset! Again, page 416, Mr. Gascoyne says, "Even from the extreme south of England, with glass protectors, Peaches are scarcely worth growing." Our experience in this locality is much more satisfactory. At

Minella, near this town, for several years on an outdoor southern wall, protected with glass only during the spring fertilizing or fruit-setting season, there have been very heavy crops; in fact, three times as much has been thinned out as was left. This year, owing to imperfectly ripened wood last year, it was expected the crop would not be so satisfactory; but visiting there lately with Mr. Crehan, head gardener, I observed an almost full crop on all the trees. In other places there are fair crops also.—W. J. M., *Clonmel*.

ROSE SHOW FIXTURES.

THERE is not, happily, this year the shifting about of shows there was last year, but it is very odd what different ideas on the subject one gets. Thus, within the last few days I have two letters from exhibitors not fifty miles apart. One writes, "If this weather continues there will be no July Roses; all will be over by the 3rd." The other says, "The 3rd is entirely too early; it ought to have been the 10th. I always advised it." Happily the date is unalterably fixed, and the secretaries are relieved from a task to which that of the old man in the fable was a joke.

The following I believe are the fixtures so far as I know them—

June 26th	Reigate.
" 29th	Royal Horticultural Society.
" 30th	Brockham.
July 1st	Farnham.
" 1st	Canterbury.
" 3rd	Shrewsbury.
" 6th	National Rose Society, Crystal Palace.
" 6th	Oxford.
" 7th	Maldstone.
" 7th	Farnham.
" 9th	West of England, Hereford.
" 9th	Ludlow.
" 10th	Alexandra Palace.
" 12th	Nottingham.
" 13th	Uppingham.
" 17th	National Rose Society, Manchester.
" 20th	Leek.
" 24th	Wirral, Cheshire.
" 23rd	Helensburgh.
" 23rd	Newton Stewart.

—D., *Deal*.

BATH AND WEST OF ENGLAND SOCIETY'S SHOW.

THIS old Society held its usual annual Show this year at Worcester, and the horticultural tent was as formerly under the direction of the Hon. and Rev. J. T. Boscawen. For some years past Mr. Boscawen has shown most successfully that a horticultural exhibition can be held in which the grouping and arrangement of the objects can be made to contribute as much to its attractions as the beauty of the objects themselves. This is accomplished by the contributions to the Exhibition being all supplied by the good will and liberality of the exhibitors, and not by the inducement of prizes large or small, or even by the desire for rivalry. The large collections of valuable plants which annually constitute those exhibitions are brought together by the personal influence of Mr. Boscawen among a wide circle of friends who are devoted to the cause of horticulture and to him.

The great tent was the same as we have described before in the many notices we have given of this great Show, but on this occasion the arrangement was varied, and there were many attractions which were new. We never saw so fine an exhibition of Orchids except at some of the metropolitan shows. Those of W. E. Brymer, Esq., Islington House, Dorchester, were particularly noteworthy both on account of the number and quality. There were fifty-five plants, which were creditable to the cultural skill of Mr. Powell the gardener. We observed especially the fine symmetrical specimens of *Odontoglossum vexillarium*; the fine pieces of *Masdevallia Harryana*, *Veitchii*, and *cærulescens*; a fine towering plant of *Lælia purpurata*; noble examples of *Aërides Dayanum*; and *Dendrobium pulchellum* and *Epidendrum prismatocarpum*; but it is difficult to select where there are so many good without naming all. But we must also note *Cypripedium caudatum*, *Dendrobium thyrsiflorum*, *Epidendrum vitellinum*, *Oncidium concolor*, and *Odontoglossum Roezli*. It was to this collection that the prize of a ten-guinea cup was awarded; and Mr. Brymer had also the honour of carrying off another cup of the same value for the single specimen of *Odontoglossum vexillarium*, which it well deserved.

The next collection of Orchids we observed was that of Mr. H. Cruger Miles of Shirehampton near Bristol. This very deservedly received the five-guinea cup, or second prize. Among these we particularly remarked a very fine *Odontoglossum Alexandræ*, *Oncidium Marshallianum*, and a beautiful variety of *Odontoglossum*

vexillarium. *Stanhopea oculata*, *Oncidium divaricatum*, and *Odontoglossum citrosimum*, *Phalenopsis*, and *crispum*, *Cypripedium Stenei*, *C. niveum*, and about a dozen others made up a fine group, which produced a telling effect at the end of the long stage, and reflected great credit on Mr. W. Perry the gardener.

The five-guinea cup for the second best specimen of Orchid was awarded to a well-grown plant of *Oncidium macranthum*, shown in a small collection by Sir William Marriott, Bart., of Down House, Blandford. Besides this there were a fine specimen of *Utricularia montana* bearing thirty spikes of flowers, a plant of *Cypripedium Stenei*, and six plants of *Odontoglossum Alexandræ*. Captain Dymond of Brooklands, Dorchester, had a fine plant of *Odontoglossum citrosimum roseum*, and *Aërides odoratum majus*.

The miscellaneous plants that produced the general effect of the Show came from many sources. Prominent among them were the fine Tree Ferns from Lord Somers of Eastnor Castle. These occupied what may be called the sky line of the arrangement, and these were supported or interspersed with Palms, Crotons, large *Brugmansias*, Ferns, and plants of fine flower and foliage of mingled form and hue. Here might be seen large specimens of *Anthurium Schertzerianum*, and there a gigantic specimen of *Agave americana variegata*. One of the largest contributors to the miscellaneous group was T. Rowley Hill, Esq., M.P.; but by far the greatest of all were Messrs. Richard Smith & Co., the extensive nurserymen of Worcester. Throughout the structure one could see how much these gentlemen had aided Mr. Boscawen in his laudable endeavours to make this portion of the Society's programme an undoubted success. No matter in what department the help was needed, all equally shared. The Clematises shown by Messrs. Smith contained some exquisitely beautiful varieties, and even the beds of decorative Violas and Pansies which were out in the turf exhibited the resources of this marvellous establishment.

One of the most successful of Mr. Boscawen's efforts at these attractive exhibitions was shown on this occasion. This consisted in a piece of rootwork which occupied the whole of one end of the horticultural tent. It was disposed in the most artistic fashion, and planted with the most consummate taste. No one could have treated the material he had to deal with in such a manner unless he had the eye of an artist. In the furnishing of this piece of rustic work Mr. Boscawen was much indebted to the liberality of Messrs. R. Smith & Co., who supplied a very choice selection of plants adapted for the decoration of such structures. These consisted of some very choice varieties of the Japanese Maples, various kinds of Oaks with variegated and coloured foliage, and studded all over in appropriate nooks and corners were lovely little herbaceous and alpine plants that actually made the mouth water to possess them.

One of the most attractive of the minor exhibitions was a charming tray of Fortune's Yellow Rose, shown by Mr. Arkwright of Hampton Court, Leominster. We never saw this Rose exhibited in such style, and we never thought it so beautiful. The shades of pink and red on the yellow ground of the petals were as varied as if they had been viewed through a kaleidoscope, and the form of the flowers was perfection itself. How Mr. Arkwright produced them in this condition we do not know, for our time did not admit of long lingering; but judging from what we saw we have no hesitation in saying that Fortune's Yellow is a Rose worth taking some trouble about.

Messrs. John Laing & Co. of Forest Hill had a good collection of their hybrid Begonias, which attracted great admiration; and Mr. Hooper of Bath exhibited a collection of very beautiful show Pansies. Messrs. Smith had some lovely Pyrethrums, and altogether the show of plants was a wonderful success.

Among the miscellaneous exhibits relating to horticulture the large stands from Messrs. Sutton & Sons, Reading, and Messrs. E. Webb & Sons, Wordsley, Stourbridge, attracted great attention. That from the former firm contained an extensive assortment of farm and garden seeds with samples of Mangolds, Swedes, and Potatoes, admirably representing the chief varieties in commerce. Messrs. Webb & Sons had also a large stand, and in addition to seeds and roots containing groups of Petunias and herbaceous Calceolarias in superb condition. The principal exhibitors of horticultural appliances were Messrs. W. Richardson & Co., Darlington, who sent samples of their boilers and hothouses; Messrs. Boulton & Paul, Norwich, who showed various appliances in wirework and garden frames. Mr. Parham, Bath, exhibited structures and heating apparatuses; and Messrs. Cranston & Luck, Birmingham, had exhibits of the same nature. Mr. Matthews, Weston-super-Mare, contributed a large collection of ornamental flower pots, vases, and similar articles; and Messrs. Bayliss, Jones, and Bayliss, Wolverhampton, had examples of fencing, garden rollers, &c.

POLYANTHUSES AND PRIMROSES.

IN a former letter I said that many Yorkshire people believed by turning Primroses upside down they would change to Polyanthuses. I mentioned this to show what erroneous ideas

people had about these flowers. In your issue of the 20th inst. (page 394) I see "AMATEUR, Cirencester," asks me if I have ever tried it. I reply, Certainly not; and if I had I should feel ashamed to own it. I do not believe in fables. "AMATEUR'S" mode of reasoning is so peculiar that I cannot help calling attention to it. After relating his unsuccessful trials to produce Polyanthus by turning Primroses upside down, he goes on to say that Polyanthus are known to change to Primroses; then adds, "If one happened to do so after being planted upside down the effect may be attributed to an erroneous cause." Not a word was ever said by me about turning a Polyanthus upside down; but as to a Polyanthus changing to a Primrose, I do not think your correspondent or anyone else can bring forward a case in which a pure and true Primrose has been produced from a properly labelled Polyanthus. It would be just as reasonable to say that any of our H.P. Roses had changed into a Dog Briar. I thank "AMATEUR" for his suggestion about classification, and shall be glad to see what he has to say on it.

"W. J. M., Clonmel," says on several occasions he has seen Primroses and Polyanthus growing on the same plant, and considers such cases tend to show that the Polyanthus, Cowslip, and Oxlip owe their origin in the first instance to the common Primrose. May I ask him at what period of the earth's history the Cowslip sprang from the Primrose? and what evidence he can bring forward to show that the Primrose did not originate from the Cowslip? The mention of Primroses and Polyanthus producing double flowers is so well known that I am rather surprised it should have been brought into the discussion. Most plants do this: how otherwise have originated so many of our beautiful double flowers?—F. BOYES.

THE GREAT INDUSTRY OF THE THRUSH.

We have had nearly three months of dry weather, and consequently those birds which depend chiefly on worms for their food have had a hard time of it. How the blackbirds have managed I know not, but I have watched with much interest the persevering industry of the thrushes, and know not how they have contrived to keep their nestfuls of hungry young supplied. This house is partly Ivy-clad, and the church near wholly so—a grand cover and harbour for snails. These the industrious thrushes have attacked day by day, drawn them by force from their snug hiding places, and broken them up on the paths of the garden and on the flat stones of the churchyard. The paths are strewn with empty snail shells, and somewhat soiled by the slaughtered snails. So, I see, it is on the shrubby paths near. The sharp-eyed strong-beaked thrush has thus all over England done much good to gardens and gardeners. I have not noticed the blackbirds so employed, but with me they are less numerous. When the fruit-eating time comes, and when for only about six weeks the thrush does us injury, let us remember the amount of good he has done for many past weeks, yea during the whole year besides, and remembering his good deeds let the gun drop from the shoulder.

The great thing is to purchase and make full use of nets. Place them over the Gooseberries in February to protect them from the bullfinches, then remove them and use them over the seed beds, especially over the radishes, as the chaffinches are sure to be troublesome, but if they are not allowed to get at them they will be doing us good at other times. Employ the nets—make full use of them, and you need not, particularly this season when birds are too scarce, destroy the birds, and except the bullfinch all in turn do good. Mind and keep the nets well raised by hoops from the damp earth, and put them away on a dry day, and they will last for a long time and pay their first cost over and over again.

I plead, therefore, strongly on behalf of the industrious thrush. Spare him for his song, spare him also for his great industry, so useful in freeing us from that slimy pest the snail.—WILTSHIRE RECTOR.

DORONICUMS.—These are among the earliest and brightest flowers of spring suitable for shrubby borders, and it is not perhaps generally known that they continue fresh when cut and placed in water for a considerable period. I have this spring had some in water for three weeks before they showed any signs of fading. The following are some of the best and most ornamental:—*D. Pardalianches*, a native of Britain;

D. austriacum, and *D. caucasicum*, of which the flowers are yellow, and *D. altaicum* with white flowers.—W. J.

NOTES ON VILLA AND SUBURBAN GARDENING.

FLOWER GARDEN.

Roses.—These have started weakly, and are much infested with the Rose maggot and green fly. The former is very destructive to the young buds, and should be constantly searched for and destroyed. Syringing with either soap or tobacco water, followed a little later on with clear water, will remove the green fly. Employ the jet belonging to the syringe, giving force to the water by compressing it with the finger. Closely pruned heads will require the removal of the inner shoots, the growth being thinned where crowded. If extra fine blooms are in request the buds also must be thinned out. Plants at the base of walls and in other hot positions are usually much too dry at the roots. Give them occasional thorough soakings with either liquid manure or soft water, afterwards mulching with good short manure, covering this over with soil. Briar stocks intended for this season's budding should have all side shoots removed with the exception of three that are strong and evenly disposed near the top.

Dahlias.—Best results follow the retention of a single stem only to each clump, and this should at once receive and be regularly trained to strong stakes. Dahlias delight in a rather rich soil, and should not be crowded; 8 feet apart is quite close enough.

Subtropical Plants.—In warm localities the planting of such kinds as *Ricinus*, *Wigandia*, *Acacia lophantha*, *Amaranthus*, *Solanum*, *Dracenas*, *Begonias*, *Ficus*, *Coleuses*, *Abutilons*, *Cannas*, *Maize*, and others, has already commenced, but the third week in June will be found quite early enough in less favoured districts. *Ricinus*, *Wigandia*, *Solanum*, and *Tobacco* are all very strong-growing, and to have them at their best should be arranged fully 8 feet apart, distributing among them dwarf flowering or foliage plants of a colour likely to show them off by contrast. Plants suitable for this carpeting or groundwork are *Iresine Herbertii*, *I. Lindenii*, *Amaranthus melancholicus* *ruber*, *Centaurea candidissima*, *Cineraria maritima*, *C. acanthifolia*, *Gnaphalium lanatum*, variegated *Coltsfoot*, variegated *Periwinkle*, *Sedums*, *Tradescantia zebrina*, *Verbenas*, providing plenty of moisture can be afforded at the roots, single seedling *Petunias*, Ivy-leaved *Pelargoniums*, and others. *Cannas* appear to the best advantage when grouped together and margined with other foliage or flowering plants. A very pleasing arrangement consists of a group of dark-foliaged *Cannas* or even *Ricinus* *Gibsonii*, thinly surrounded by *Abutilon Thompsonii*, followed rather closely with *Iresine Herbertii*, with a margin of blue *Lobelia* alternating with either *Festuca glauca* or *Dactylis glomerata*. Another good arrangement consists of a centre plant of either *Acacia lophantha*, *Wigandia caracasana*, or *Solanum Warscewiczii*; at about a yard from this a thinly disposed ring of either the silvery-foliaged *Solanum marginatum*, or the golden variegated *Abutilon Thompsonii*, with an outer ring of *Ficus elastica*. The groundwork may consist of either *Iresine Herbertii*, *Amaranthus melancholicus* *ruber*, or *Petunias*, with a margin of either a silvery or golden-foliaged or blue-flowering plant. The dark-stemmed *Ricinus* contrast well with the silvery *Cinerarias*, and the *Coltsfoot* and *Periwinkle*. A general assortment of foliage and flowering plants, if judiciously arranged in a large bed or border, will afford much pleasure. In addition to the above-mentioned plants the following may be included:—*Fuchsias*, *Tuberous-rooted Begonias*, *Plumbago capensis*, *Lobelia cardinalis*, *Erythrina crista-galli*, *Chrysanthemum frutescens*, *Tigridias*, *Gladioli*, *Kalosanthes*, and many more subtropical plants, should as much as possible be planted in sheltered well-drained spots, coldness at the roots being very injurious, and strong winds much disfigure the fine-foliaged plants, notably *Ricinus*.

VINERIES.

Many of the Vines that have not been forced are now in flower, and for the benefit of any shy-setting varieties a drier atmosphere should be maintained, but avoid cold draughts. Smartly tap the Vines towards mid-day in order to distribute the pollen. Ventilate the house before the sun heat is very powerful, otherwise both the foliage and the fruit are liable to be scalded. A temperature of from 80° to 85° is not too much with sun heat and ventilation. Close early enough to raise the temperature to about 90° later on, leaving the top ventilators slightly open. When the Grapes are set frequently damp the floors, and syringe the walls and any plants that may require it morning and evening, and also the Vines should they be infested with red spider. The water must be perfectly clear, and also of the same temperature as the house. Thin out the bunches freely, as a heavy crop is not unfrequently of comparatively little value, and is besides very apt to weaken the Vines. A hundred well-finished bunches are of a greater marketable value than are perhaps twice that number of imperfectly grown examples. A bunch to every other lateral is in most instances quite sufficient. Complete the tying-down of any shoots requiring it, stopping them two joints or less according

to the space beyond the bunches, and the sublaterals to one joint. Carefully train those shoots required for furnishing or for the renovation of the Vines, pinching back all the side shoots to one joint at each break. Inside borders should receive frequent copious waterings, and also the outside borders if well drained and during dry weather. Water should not be given direct from the taps or pumps, but should be softened and warmed by exposure to the sun and air. Exhausted borders should have a light dressing of some kind of artificial manure previous to the waterings (always supposing liquid manure is unobtainable) in addition to the heavy mulching of manure.

HOTBEDS AND FRAMES.

Melons.—These are not so difficult to grow during the summer months as some people imagine. A slight hotbed only is required, placing in the centre of each light a bushel of soil, adding about the same quantity as the roots extend. A loamy soil should be employed, the best being that obtained from immediately below the turf of good meadow land slightly enriched with manure. When the trial stick can be comfortably borne in the hand is the time to plant, placing two plants to each light—one to be trained up the bed, the other down. They should have been previously headed back, and from each may be taken three shoots, which should be allowed to extend till the sides are reached. The side shoots from these will produce abundance of fertile blooms, providing the varieties previously recommended are grown. Set as many of these as possible at one time, afterwards thinning the fruit to three or four to each plant. Do not allow the soil to become dry excepting near the collar. It is there the plants are liable to canker, and for this reason are kept as dry as possible. Avoid shading, open early on sunny days, and when closing at about 4 P.M. (earlier if dull) sprinkle the plants with tepid water, and also the sides of the frame. Cover up with mats during cold nights. It ought to be stated that the soil about the roots cannot well be made too firm at planting time.

WORK FOR THE WEEK.

KITCHEN GARDEN.

THE recent rain has considerably improved the appearance of the crops, and where mulching has been attended to the result will now be found very beneficial; but if not yet done no time should be lost in placing a good covering between the rows of late Peas, Dwarf Kidney and Runner Beans, and Cauliflowers, afterwards giving a good supply of water if the weather be dry. Globe Artichokes in bearing, also those planted this spring, will require a liberal supply of water. Take advantage of favourable weather to plant out successional crops of Cauliflowers, also Brussels Sprouts, Savoy, Broccoli, and Winter Greens. Plentifully supply water to Celery in all stages of growth; that planted very early will now be sufficiently advanced to admit of good earthing, taking care that the soil is not allowed to get into the centre of the plant, or the heart will be cramped or diseased. Plant out for succession and prick out from late sowings for late supplies. Prepare trenches, and make the space between them available for crops of Lettuce, Endive, or Summer Spinach, which should be sown in drills and thinned out afterwards. Transplant Endive when large enough 15 inches apart every way, maintaining successional supplies of this, also of Lettuces, Radishes, and Turnips, by occasional sowings; and to insure crops of fine quality they must be regularly supplied with water in dry weather. Sowings of French Beans, and the earlier varieties of Peas may yet be made. Cease cutting a portion of the Asparagus beds, and do not continue cutting from the other beds longer than is absolutely necessary, as it is very important that the plants have sufficient time to make a good growth in order that the buds for the ensuing season may be matured. Attend regularly to the requirements of ridge Cucumbers and Vegetable Marrows planted out under handlights in watering, &c.; and as soon as the stems begin growing elevate the handlights to allow them pass out underneath, earthing up the plants and pegging out the shoots. Peas are coming on rapidly, William I. being pre-eminent, and First and Best, combining as they do earliness with productiveness and quality. Copious supplies of water are necessary in dry weather to those bearing. Later crops should also have attention, and if too thickly placed may be thinned to about 2 inches apart, staking as soon as fit. Complete at the earliest opportunity the potting of Chili and other Capsicums, also Egg-plants, and place in pits or frames. Sow Roseette Colewort.

FRUIT HOUSES.

Pines.—Fruit ripening must not be syringed after it commences colouring, but the supply of water at the roots must be continued as before when necessary; and to improve the colour and quality of the fruit ventilate liberally, but do not allow the temperature to fall below 80° in the daytime, gradually diminishing the moisture in the house, maintaining a night temperature of 70° to 75°. Plants of Queens and Providence started into fruit last February will ripen this month, whilst Smooth Cayennes and Charlotte Rothschild will require about a month longer to finish properly. Under the same conditions they furnish a good suc-

cessional supply, which may be still further extended by removing some of the fruiting plants to a cool airy place. Keep the heat at the roots at 80° to 90° for all the plants except such as are being rested prior to starting. Fire heat for successional stock will not be necessary much longer, as the temperature, by the assistance obtained from the heated beds in which the plants are plunged, rarely falls below 65°, and this temperature is more suitable for the satisfactory development of the plants than a higher one. Recently potted plants make growth quickly, and strict attention should be given to ventilation to prevent an attenuated growth; therefore admit air at 75° to 80°, increasing it until 85° is reached, and above this ventilate fully, diminishing it in the afternoon, closing the house at a temperature of 80°, affording a light sprinkling overhead daily when bright weather prevails. From the suckers on the early-fruiting plants a sufficient number should be selected to meet the demand, and if started at once the plants resulting will be suitable for fruiting from this time onwards another season, and will form a supplementary batch to those started in March, their requirements being identical, only shading must be more effectual.

Peaches and Nectarines.—When the fruit is all gathered in the earliest house, or from individual trees, the wood upon which it has been produced should be cut away to the shoot at its base, which is to afford the bearing wood of next season, except if the fruit has been produced on wood that it is necessary to retain for the extension of the trees. All growths not absolutely necessary for bearing next season or the extension of the trees should be cut away, as it is important that the foliage be fully exposed to the influences of light and air, and it is equally important that it be kept healthful and die off naturally. Employ the syringe freely, keeping the inside borders well watered, and the outside border must not be neglected if the weather be dry. All the air possible should be admitted, and when the trees have been injured to the air the roof lights where moveable may be taken off. In gathering the fruit great care is necessary in handling it, as slight pressure is sufficient to spoil its appearance. Fruit for packing should be gathered before it is quite ripe, and all is better taken from the tree rather under than over-ripe. Some netting suspended beneath the trees is useful in preserving fruit that drop from being bruised. In the succession houses former instructions must still be attended to, syringing the trees frequently to keep down red spider, tying-in and regulating the shoots. Any leaves that shade the fruit must be drawn aside, shortened, or removed, so that the sun and air may colour them.

Orchard House.—Insects will be troublesome unless prompt measures be taken to keep them down, for which purpose there is nothing better than syringing forcibly with clear rain water. This should be done every afternoon, and so early as to have the foliage fairly dry before nightfall, as when the trees are syringed late the foliage is kept very wet through the night causing many of the leaves to become black at the points. If, however, syringing fails to keep the trees perfectly clean recourse must at once be had to fumigation when the foliage is dry. The black aphid of Cherries, the brown aphid of the Peach and Nectarine, and the blue aphid of the Plum, are difficult to kill and will need repeated fumigation, for though a powerful dose may destroy the insect there is a danger of injuring the foliage at this early season. Dipping the shoots into tobacco water and gently rubbing the infested leaves with the fingers, is a somewhat tedious means of destroying Cherry aphid, which fastens on the under side of the leaves and are difficult to get at with the syringe. The angle crank syringe admit of their being reached, and tobacco water applied in the evening will destroy it, or nicotine soap 4 ozs. to a gallon of water is thoroughly effectual against every kind of insect and is quite safe. Whatever means are adopted should be in the evening, and the trees have a thorough washing with the garden engine the following morning. Attend to the trees in watering with regularity, and be guided by their individual requirements, giving a thorough supply when necessary. During fine weather the ventilators may remain open by night as well as by day, closing them, however, when cold or high winds prevail.

FLOWER GARDEN.

The tender varieties of plants employed for summer decoration should now be placed out providing they have been properly hardened, for unless inured for some time to the sun they will be scorched and spoiled in appearance. It is a good plan if the weather be bright at the time of planting to give a slight shade such as that afforded by a few evergreen branches, which will assist them to become established. Subtropical plants require considerable taste and skill in grouping, choosing such as associate well together, and for isolated plants those only of stately contour or bold aspect, as Palms. Warm sheltered situations only are suitable for this style of decoration, as the wind soon injures large-leaved plants. Before planting see that the soil is thoroughly enriched, as their beauty depends on the full development of the foliage, and such as require it should be neatly and securely staked, and be abundantly watered as growth proceeds. The ground can hardly be too much enriched for Asters, Stocks, Zinnias, &c., and if a slight shade be given them after planting they will become sooner established. Annuals that have been sown in

masses in beds or borders should be freely thinned out, so as to allow the plants to develop, the flowers being then finer and more abundant. Herbaceous plants will now require attention in staking and tying as they advance in growth. Before staking the plants will be much benefited by having the greater portion of the weakest growths removed, so as to strengthen those left and induce fine heads of bloom. Where only one stake is employed the different branches may be looped up separately and not too closely, striving to secure a natural appearance. The borders must be kept free of weeds, and raked so as to have a neat appearance. Roses are making a rapid advance, and should be supplied with liquid manure liberally, and the beds or borders be mulched with partially decayed manure. Ranunculuses should be abundantly supplied with water, and Tree Paeonies also with liquid manure to improve the blooms. Plant Dahlias in well-enriched ground, staking early. Hollyhocks must also be securely staked. Sow Brompton Stocks.

PLANT HOUSES.

Orchids.—Dendrobiums require liberal treatment to enable them to make strong growth, syringing them frequently on hot days. Odontoglossums must have air given early in the morning, so as to keep a cool and sweet atmosphere, they requiring copious supplies of water at the roots and frequent syringing overhead. Odontoglossum citrosium flowers become spotted in a few days after they open in a damp atmosphere, but in the drier atmosphere of a greenhouse they are presentable for weeks. Similar remarks apply to many of the species growing in cool quarters. The yellow thrip is sometimes very troublesome, a great pest to Odontoglossums, and should be kept under by frequent fumigation. Masdevallias do well in a cool north pit for the next two or three months, as if kept too warm they become drawn and weakly, and flower but little; they require plenty of water at the roots, and the leaves should be frequently sponged. Anguloas will now require plentiful supplies of water. Oncidiums starting into growth may be repotted. Cypripediums will require watering and syringing freely, keeping plenty of moisture through the house. Increase the air in the Cattleya house, shading only to prevent scorching. To prolong the blooming of Cattleyas and Lælias remove them to a dry cool house. Miltonias that have completed their growth must also be placed in a similar position, and have water only to prevent the pseudo-bulbs shrivelling. Examine the collection generally, and any plants that have filled the pots with roots, having made vigorous growth, should now have a shift. Where the plants are grown in pots the roots frequently attach themselves so firmly to the sides that it is impossible to turn them out without injury, in which case it is better to take a pot two sizes larger, and carefully place the one containing the plant into it, working in a few crocks and sphagnum. When baskets are used, and the plant has overgrown the basket, carefully remove the roots from the wood with a thin-bladed knife. Examine the blocks of wood, and if any are decayed obtain new ones at once, which will enable the plants to make fresh roots before the close of the growing season. If the repotting be carefully done the plants will not receive any check. All East Indian plants that do not require shifting should be top-dressed with fresh sphagnum, and will require syringing frequently on bright days.

TRADE CATALOGUES RECEIVED.

R. Holliday, The Pheasantry, Beaufort Street, Chelsea, S.W.—*Illustrated Catalogue of Garden Appliances.*
Ant. Roozen & Son, Overveen, Haarlem, Holland.—*Catalogue of Bulbs.*

TO CORRESPONDENTS.

. All correspondence should be directed either to "The Editors" or to "The Publisher." Letters addressed to Mr. Johnson or Dr. Hogg often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense. Correspondents should not mix up on the same sheet questions relating to Gardening and those on Poultry and Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

VINE LEAVES SCORCHED (J. R. N.)—The variety is a rather tender one. If the scorching continues sprinkle a little lime wash on the glass directly over the Vine, applying it with a syringe. The Vine is evidently healthy and will speedily recover.

SEEDLING PELARGONIUM (F. K.)—The truss sent is very large, and precisely resembles the good old variety Rose Rendatier. The foliage is also the same as of that variety, and your seedling therefore cannot be regarded as new and distinct.

CUCUMBERS GUMMING (T. C.)—We can only account for the circumstance from the plants being in too rich soil, and the leaves cannot elaborate the abundant sap with which they are supplied. We have had Cucumbers in the same state as yours, and found the remedy in poorer and firmer soil.

PROPAGATING GHENT AZALEAS (A. J. Hand)—The mode adopted by nurserymen both in this country and in Belgium is layering the stems in

autumn from plants in beds outside. They may also be increased by cuttings of the half-ripened shoots inserted in light soil in heat, but the former method is the best, as plants of moderate size are obtained more quickly.

PLUMS UNHEALTHY (G. B.)—We do not find any insects on the leaves sent. The discoloration of the foliage is probably caused by the late dry weather. The Fern enclosed is probably *Davallia solida*, but it was too much crushed for anyone to tell its name with certainty. The specimen sent last week was a very imperfect one, and resembled a portion of the frond of *D. Mooreana*. We received no letter whatever from you last week.

INDIAN PLANT (W. W. A.)—The leaves and stem you sent resemble those of *Stigmaphyllon ciliatum*, and if it be that species it is worth growing, for it bears fine clusters of yellow flowers. It is of free growth, only requiring a moderately rich soil and a light warm position in an ordinary stove.

TRANSPLANTING VINES (Idem)—Provided due care is exercised in taking them up, and the roots are kept moist during transit to your new garden, the Vines may be moved with perfect safety after the leaves fall in November. Nitric or muriatic acid applied to the putty with a brush will, it is said, in an hour render the putty soft enough to be removed. As every case of removing garden structures has its own peculiarities your safe plan will be to consult a solicitor on the point you have submitted to us.

DOUBLE PYRETHRUMS (S. S.)—Your letter shall have our attention. We have never found any difficulty in cultivating these flowers. Small plants of choice varieties obtained in the autumn we have wintered in cold frames, the pots being plunged in ashes; but when the plants have become established in the beds they have given us but little further trouble. We have plants in the bed in which they have grown for eight years, and they are as healthy as ever. The soil is medium loam and well drained, and the bed has been mulched with manure annually in November.

HEATING PIT (Kitt)—The two pipes you name will be ample for excluding frost from the pit. We should place one near the front, as shown in your sketch, and the other 2 feet from the back wall, the danger from frost being much less at the back than the front of the pit. The pipes in the Mushroom house should be placed in each side of the path so that they do not dry the surface of the beds. The quantity of piping you name is needed for maintaining the proper temperatures in the structures mentioned.

CUCUMBERS NOT SWELLING (J. S.)—The evil either arises from a too moist atmosphere and low temperature, or it is the result of imperfect fertilisation. Maintain a night temperature of 65° with a little ventilation, allowing an increase during the day to 70° or 75° with fire heat, and a further advance to 85° with sun. Permit the atmosphere to be sufficiently dry during the early part of the day to ensure the dispersion of the pollen, and syringe the plants only in the afternoon at closing time. By adopting this course, and applying sufficient water at the roots to secure healthy growth, the fruit will set and swell freely.

PRIMULA CORTUSOIDES AMENA (Mrs. C.)—The plants should be potted if needed, or top-dressed, care being taken that the drainage is clear; then place the pots on ashes in a frame in a cool position and ventilate very freely, removing the lights entirely during fine weather and on clear nights, so that the plants can have the benefit of the dews. The plants also do very well planted out on a north border, repotting them in the autumn. The Vallotas that have been repotted and top-dressed ought to have been placed in the genial temperature of a greenhouse and cool stove for a time. The pit has been too cold for them during the recent cold weather.

ROSES UNDER GLASS (Tyro)—You may grow Hybrid Perpetual Roses as well as Teas, and you will find the best varieties named in the elections of Roses in past issues of the Journal and in the "Gardeners' Year Book," but an experienced cultivator would grow Tea and Noisette Roses under the circumstances and for the purpose indicated. You will find much information relative to Roses both outdoors and under glass in our "Garden Manual," which you can have post free for 1s. 9d. Plant the three Roses previously named for covering the back wall, permitting any one of them to extend, that answers your purpose better than the others, which can be cut away as the room is wanted. Boiled linseed oil can be had at the oil shops, and will answer your purpose for making putty.

GREENHOUSE AND VINERIES (—)—Your proposed houses we should divide into 18 feet for greenhouse, with stage in front 3 feet wide, and a step stage at the back, with 3 feet pathway. Early vinery about 15 feet, and late vinery 35 feet. The whole of the soil for the Vine border should be excavated to a depth of 3 feet 6 inches, placing 9 inches of rubble at the bottom for drainage, with a drain in front with proper fall and outlet. The border should be the width of the house, and if part be inside all the better. Two rows of 4-inch pipes along the front and one end of each house will be sufficient for heating, taking the flow and return along in a shed at the back of the houses and branching off for each house. Have a tank by all means for rain water under the greenhouse, but covered, or you will have too much moisture in winter. Take out the whole of the soil and make the border with fresh soil.

VINES UNHEALTHY (Curate of Hoxden)—The root-action of the Vines is defective. There is either something in the border that is unsuitable for them, or they may have been injured by the excessive rains of last summer. The latter is likely to have been the case if you used stable manure very freely. The fact that the Vines which have produced roots inside the house are in much better health than the others shows that the roots outside are not in a satisfactory condition. Making a hotbed for Cucumbers inside the house and burying a foot of the lower part of the stems of the Vines was a dangerous proceeding, and we should have thought that the Vines last year would have shown that it had injured them. Whether it has really been injurious you can determine for yourself by noticing whether those Vines so buried are the healthy ones you refer to or not. Until we know this, and the proportions of the compost employed in making the border, we cannot suggest what cause you should adopt to improve the condition of the Vines.

SEEDLING PANBIES (Mrs. O. K.)—You are quite right in regarding the varieties of which you have sent us flowers as being above the common order of seedlings grown as border flowers. The fancy varieties are very attractive, notably No. 12, which, however, is not sufficiently circular. Nos. 2 and 6 are also effective, the latter being the best; while Nos. 4, 6, and 7 are showy, but the colours are not sufficiently defined. Some of the selfs are also excellent as border flowers. The best of these is No. 3, which is extremely rich and velvety, and of good form; No. 9 is rich, but small; No. 10 nearly black with a faint green tint, novel; No. 8 too flimsy; No. 1 large and effective, but lacking depth and firmness in colour; No. 18 a rather unusual colour and effective; No. 11 is an ordinary form calling for no comment.

As seed-bearing parents we prefer Nos. 2, 3, 5, 9, 10, and 13. No. 3 is the best self, and No. 13 the most attractive fancy flower, but not quite equal in form to No. 5.

PLANTS FOR BASKETS (P. C.).—Besides Ivy-leaved Pelargoniums various Tropaeolums of the Lobbianum section are fine for basket-4, also Achimenes in variety. Torenia asiatica and Tradescantia zebrina are fine basket plants, and many Tuberous Begonias are suitable. Saxifraga arneutoma is especially suitable, and Mairandya Barclayana and Campanula garganica are admirable for this purpose. Lobelias, Heliotropes, and several Mesembryanthemums and Pecunias may all be grown well in baskets, and Cereus flagelliformis is peculiarly suitable for this mode of culture. Fuchsias of spreading habit have a pretty effect in baskets, as also have such Ferns as Asplenium longissimum, Gonolophium subauriculatum, and Lygodium scandens. Antirrhinum procumbens is useful, as also are Lonicera aurea reticulata, Coprosma Baueriana variegata, and Vitis heterophylla variegata. Some of the plants named require to be started in heat, such as the Torenia, Achimenes, and Begonias, but are suitable for the greenhouse during the summer.

MIMULUSES IN POTS (Idem).—They require a cool moist position in hot weather, such as in a frame placed on the north side of a wall or building. A greenhouse during the summer is much too dry and warm for them, although they may be placed in the house when they are in bloom. Your seedlings ought to flower this year and make fine plants for next season. The address of M.M. Vilmorin, Andrieux & Cie, is Quai de la Mégisserie, Paris.

CUCUMBERS UNSATISFACTORY (S. B.).—The plants have had a check of some kind; they have either been too dry at the roots or too cold at night. Water them regularly, and do not let the night temperature fall below 65° nor the day temperature rise above 85°. Remove the malformed fruit, and as the others appear shoot the shoots at one leaf beyond each. Daniel's Duke of Edinburgh produces long fruit, Munroe's Duke of Edinburgh much shorter specimens.

DEODARS UNHEALTHY (J. W. L.).—Your specimens have no doubt been injured by the severe frosts of last winter. We have seen many fine specimens of this handsome Conifer totally destroyed. A severe frost that occurred suddenly in November when the growth was in a tender state was very injurious to many shrubs and Conifers.

NAME OF FRUIT (W. P.).—The Fig is Brunswick.

NAMES OF PLANTS (J. Wooleright).—Cattleya Forbesii. (E. M.).—1, Crataegus Crus-galli; 2, Pyrus arbutifolia grandiflora. (M. G. S.).—Claytonia virginica. The sprays arrived as fresh as when cut from the plant, damp moss being placed round their stems, and the whole enclosed in skin gutta percha (oil silk is equally good) and firmly placed in a small box. This is the best mode of sending sprays of plants to be named. (Mrs. Edwards).—You took great pains to pack the flower securely, but dry cotton wool extracts the moisture so much that the foliage was as dry as if it had been cut for a week, and the petals were discoloured and shrivelled, yet the bloom is identified as the sweet and good Tea Rose Sombreuil. (Henry White).—1, Geranium striatum; 2, Nepeta Glechoma; 3, Veronica Chamedrys; 4, Erodium cicutarium; 5, Stellaria Holostea; 6, Veronica Beccabunga. (Irish Subscriber).—The plant received is Erinus alpinus, a native of the Pyrenees mountains, one of the most beautiful of alpine plants now become naturalised in several places in Britain. Where it once establishes itself it grows freely, particularly in sandy soils or old walls. It grows on an old wall abundantly near Clitheroe in Lancashire. (T. S.).—1, Specimen much crushed, but it resembles Mesembryanthemum blandum; 2, Buddles globosa; 3, Insufficient for identification, but possibly a sickly shoot of Cedrus Deodara. (C. M. Brevin).—The plant with small round leaves covered with red hairs is Drosera rotundifolia. (E. M., Dorking).—It is a spray of the Spindle Tree, Eucynonius europæus.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

CULTIVATION OF PRICKLY COMFREY.

THE true Caucasian prickly comfrey is generally considered to be one of the most productive of our forage plants. The habit of this plant in growth is somewhat similar to rhubarb, the plants having a broad crown containing numerous sprouts or buds, which increase greatly in number when properly cultivated on good land in a favourable situation. These sprouts may be taken off and planted, and thus the stock is increased. The roots or plants after having been set out and properly matured are also offered by certain seedsmen and nurserymen at so much per thousand. Like any other strong-rooted plants, the more matured they are the better they will bear the transition of replanting into other districts, where they may not only be planted in a different soil, but also under other varying circumstances. Before proceeding with a description of the cultivation, planting, &c., we wish to observe that there is a new variety called the Solid-stemmed comfrey produced from root-cuttings, and grown by Mr. H. Doubleday, Coggeshall, Kelvedon, Essex. The plant as sketched was stated to have been set in February, 1876, and that on July 31st in the same year the height of the foliage was 8 feet, and the circumference of the foliage 9 feet. What the difference in other respects may be, or the advantage if any, over the ordinary sort is not stated; we have been informed, however, that the latter gives a smoother leaf of a lighter colour.

In introducing this plant to the notice of the home farmer we by no means ask that a large space should be devoted to it at first; but we advise that a few rods or a quarter of an acre only may be grown as a matter of experiment—in fact, the cost of the sets would be a rather serious charge if acres were planted. If after cultivating a patch for an experiment it is found to be required for the cattle on the farm, the soil and climate being suitable for its growth, sets to some extent may be obtained without purchase from the experimental patch, because small offshoots soon increase. The plant is of a gross and luxuriant growth on suitable soil, but to obtain the fullest crops a strong loam upon red or yellow clay is best, as these clays generally contain a large proportion of potash, and this is essential to plant; it is therefore advisable to ascertain by analysis the amount of potash contained in the subsoil, because it is more important to the growth of comfrey than the surface soil, as it roots into the ground so deeply, often to the extent of 4 or 5 feet. One of the important points in its growth is that to obtain the full feeding value of the foliage it must be cultivated and manured, so that the crop may be of the greatest weight per acre. Not only is this necessary to ensure an early quick succession of cuttings, but the value of the crop depends very much upon its luxuriance. If the growth is poor and stunted the quality is injured, because the leaves will then chiefly consist of woody fibre, and be comparatively tasteless, whereas when the produce is extensive the leaves are extremely succulent, and are very forcing, and much relished by the stock.

This crop is different from nearly all other forage crops, because it roots so deeply in the soil that the growth seems almost independent of weather and climate. When grown on deeply tilled land it will afford heavy cuttings during the season, and continue to grow until cut down by severe frost. In the hottest and driest season it will yield most abundantly, even when nearly all other fodder crops are either dried up or at a standstill. It also comes earlier than any other forage, not excepting Italian rye grass, especially when covered in winter with long stable dung, for we have known two instances in the last spring when it was fed off by sheep in the months of March and April. We must, however, caution the home farmer as to the feeding and folding sheep on the crop, for if they are allowed to lie in the fold more than one day they will eat out a large portion of the buds of the plants, and thus injure and delay the succession; it is therefore best to mow or reap it, which will not interfere with the succeeding crops; in fact, it leaves all the buds ready to start again immediately the heavy foliage is removed.

We have excellent evidence from practical farmers as to its value as fodder for horses, sheep, pigs, and dairy cows. One farmer informs us that he has just finished feeding his sheep with comfrey, and that he has maintained the plant in full growth for thirty years, and that it is now as good or better than it has been at any time during that period. He further states that he has obtained several cuttings in a year, and that it has never been manured, only the weeds being kept down between the plants. In order to obtain the full value and bulk of produce, however, there is no doubt but that the crop will answer for careful manuring like other forage plants. We therefore recommend that to obtain full crops a piece of grass land, such as an orchard, would be suitable, not only giving a crop of comfrey during the spring and summer, but would also increase the growth and produce of the fruit trees. Any piece of land of sound clayey loam situated below the level of a farm premises would be suitable for the growth of comfrey, as it may then be irrigated with the drainage from the cattle stalls and piggeries, in which case an enormous quantity of foliage may be secured equal to anything recorded. For this, however, we must refer to information of those who have ascertained what quantity can be grown. It has been stated that from 80 to 120 tons per acre have been obtained. Any newly broken woodland or low-lying meadow which would be subject to floods from a brook would be suitable.

In the event, however, of growing it upon sound arable land it should either be spade-trenched or steam-cultivated, and the land

laid into stretches about 80 inches apart, and farmyard dung or guano placed in the furrow, the plants or sets being carefully placed by hand about 2 feet apart, and buried up to the crowns with loose earth; the plough may then be employed to finish the work and form the ridge. The only thing required afterwards would be hoeing by hand to keep down the weeds, very few of which could compete or maintain themselves against a full crop of forage taken many times in the year. In the early spring the horse hoe may be used just to break the surface between the plants, at which time the manure may be applied, such as guano, nitrate of soda, potash, salt, and kainit, all of which are likely to produce an excellent effect both in the bulk and feeding value of the crop. The leaves may be employed for feeding fattening cattle in the summer time, and if crushed with the chaff-cutter or pulper would do well to be mixed with cake or bean meal, and used without waste, in the same way as roots are pulped and mixed with any feeding stuffs.

The following is Dr. Voelcker's analysis of the comfrey, given in the "Bath and West of England Society's Journal":—

	LEAVES.		STEM.	
	In Natural State.	Calculated Dry.	In Natural State.	Calculated Dry.
Water.....	88.400	...	94.74	...
Flesh-forming substances....	2.713	23.37	0.69	13.06
Heat and fat-producing matters and substances	6.898	59.49	3.81	72.49
Inorganic matters (ash)	1.990	17.14	0.78	14.45
	100.000	100.00	100.00	100.00

WORK ON THE HOME FARM.

Horse Labour.—This has been chiefly employed in forwarding the fallows in readiness for drilling the seed of Swedes, turnips, rape, and thousand-headed kale. Within a few days, however, from this time the seed for a Swede crop should be drilled. For a late crop to hold over for spring feeding on the land with sheep it may be drilled up to the 20th inst., but for the main crop there is no better time than from the 7th to the 12th of June. Immediately following turnip seed may be drilled for early feeding, both for sheep and cattle, with advantage. The varieties we recommend are the Purple-top Mammoth and the Grey Stone. Both these grow very quickly, and at the same time will maintain their feeding value for many months without decay. Nearly all the Globe varieties, however, now offered are more or less delicate in their growth; and, although they grow quickly, they soon lose their quality unless fed off or used as soon as ripe. We allude more particularly to the Pomeranian Globe and the Green Globe, and we prefer to use Suttons' or Carter's Green-top Champion Hybrid. These may be drilled as late as the first week in July, and maintain their quality through the month of January following, although they will be a full crop in November, and will stand the frost better than an early-sown Swede, as they do not suffer so much from mildew in the autumn months when the season is dry. The home farmer must remember that the times stated for drilling Swedes and turnips apply to the midland, eastern, and southern counties; but for the northern counties and Scotland the seeds should be drilled from three weeks to one month earlier.

Economy in the horse labour of the farm, especially where steam power is not used, is a matter of more importance than ever, particularly in reference to one-horse labour. On our land, as well as in our agencies, we have adopted this mode for upwards of thirty years, especially in all the light work and second ploughings in the spring and summer, ploughing the land for potatoes at the time of planting, and preparing the land for root crops upon any land except the heavy clays. Upon gravelly loam, sandy loam, chalk loam, and light gravelly land we for many years have given up two-horse ploughing, except for the double-furrow ploughing, and where the fallows require cultivation. We formerly used Coleman's scarifier with three or four horses attached, but we have long since employed instead a strong horse hoe with plain tines for combing out the grass and weeds. We find that one horse will do 2 acres a day and sometimes more, whereas Coleman's implement will do about $\frac{3}{4}$ or 4 acres at the most drawn by three or four horses. In all cases as a matter of economy we use the strong horse hoe drawn by one horse only, except in hard, dry, and unbroken land, when we employ Coleman's scarifier. The home farmer must, however, remember that in speaking of one horse we refer to an animal of 16½ hands high and stout in proportion, with good action, and in high condition; in which case very few are aware of the economy which can be effected in the horse labour of the farm. Again, in carting work, whether it is at hay time or harvest, we ought to employ horses capable of drawing a ton each and more if required. This idea leads to the vexed question in some districts as to the advantages of the one-horse carts *versus* waggons. As, however, we intend to refer to this matter in a lengthened article in the future we shall leave the subject at present.

Hand Labour.—This will now be connected with hoeing potatoes, mangolds, carrots, early turnips, &c., also in making and attending the earliest cuttings of grass for hay. The timber which may have been cut upon the home farm for repairs will have by this time been barked, and the bark carted away; but the lop, top, and havins should now be made up ready for removal, and where the trees are lying in the fields these also should be removed, the sooner the better. The dairy cows and also young cattle, as well as fattening bullocks in the pastures, owing to the drought prevailing, have been in many instances short of grass. There is, however, the saying that "roast meat is better than boiled;" thus we often find the cattle do better on a short allowance of healthy grass in a dry time than when there is abundance in a rainy season. Our object in referring to this is to call the attention of the home farmer to the advantage of supplying the additional wants of the cattle with an allowance of oilcake when the grass is short. It is also important that they should have access to water and rock salt at all times, and this refers to horned stock of all ages. The failure of fodder crops, such as trifolium, vetches, &c., has been so great upon most farms that the sheep, whether for stock or fattening, have been obliged to be folded upon the field grasses usually held on for hay. This also should be supplemented by giving the sheep and lambs a liberal allowance of cake, for they will pay for it at the present value of mutton, &c.

POULTRY AT THE BATH AND WEST OF ENGLAND SOCIETY'S SHOW AT WORCESTER.

The poultry Exhibition in connection with the Bath and West of England Society's Agricultural Show was this year held at Worcester. The weather on the opening day was anything but favourable, being cold and squally. Doubtless this must have affected the attendance considerably. However, the poultry and Pigeons were made as comfortable as possible, a magnificent marquee being erected for their accommodation, and they were also well and suitably fed and attended to. The late Mr. Hewitt has on former occasions generally judged the poultry; this year Mr. Tegetmeier filled his office, and Mr. Esquilant adjudicated on the merits of the Pigeons. The entries were numerous, reaching over six hundred. It is a pity the Association cannot see their way towards shortening the time during which the birds are detained from their homes. The Show was held from Wednesday until the following Monday. This is much too long for either poultry or Pigeons to be cooped up in their small pens. This with two extra days for travelling makes a really serious length of time.

Buff *Cochin* cocks were first in the catalogue. First was a dark-coloured bird, good in shape and in fine condition, but defective in comb; second was very similar in colour, a good shaped bird with plenty of hack. Both these birds were, to our taste, fully dark. Pen 3 (Tomlinson), was a pretty coloured one, and Lady Allsopp's, a very good-shaped light Buff, a handsome bird. In hens, first was a pretty coloured Buff, clear and large, good in shape, and not much hocked. Second was a good hen, well shaped, but rather dull in plumage. Mr. Tomlinson's hen was a very good one, well worth honourable mention, even if she were not better than the second. Partridge cocks, first was a very good bird in fine condition, large and good in shape; second was small but in fine condition, a little light in hackle. Pen 88 (R. J. Wood) we considered a better bird than 82 (G. H. Wood), although unnoticed. In hens first was a fine, large, good-shaped well-pencilled hen; second was small and narrow, not so well marked nor so good generally as pen 85 (J. Wood) a very good and well-marked hen but broody; 44 (R. J. Wood) a good hen. In White cocks first was in beautiful condition but small; his fresh appearance had certainly a very good effect, but he was decidedly small. Second was a good bird, fine in shape and in good plumage; 49 (Breeze) was a large bird of good shape, but defective in comb and in feathering of the middle toe, otherwise about the best in the class. In hens first was small but good in shape; second another smallish but well-shaped hen. 60 (Darby) we thought decidedly the best in the class; a beautiful-shaped large hen, but rather scaly on the leg.

In Dark *Brahma* cocks first was capital in colour and in fine condition, but small and narrow; second was very clear in colour, good in that respect except a slight ticking on the breast, but he was also small. 62 (Kendrick) was large but very yellow. Mr. Lingwood's, although scarcely the correct *Brahma* shape and heavily ticked on the breast, we thought about the best in the class. The class, however, contained nothing of the style which we used commonly to see a few years ago. In hens first was a handsome bird, large and good in shape, well pencilled on the back, failing a little on the throat, a good *Brahma* head. Second was a beautifully marked hen in fine feather, very good in shape, although with rather a sour expression. 76 (Lingwood) a fine, large, good shaped hen, although a trifle brown. In Light *Brahma* cocks first was very large and good in shape, having, however, the drawback of a coarse comb. Second was also a very good bird, large and fine in shape and with a neat comb. 80 (Onions) and 81 (Bigg) were both good. In hens first was large and of good shape, with a beautiful hackle and a fine head, in beautiful feather. Second

was also a large well-shaped hen. Mr. Wood's two hens were both good, the one highly commended having a very pretty hackle.

In *Langshan* cocks the first was a fine bird, large and in good condition, with what the fanciers of this breed would, we suppose, consider the true characteristics of the variety; second going to another fine bird of the same type. In hens both the winners were good specimens of the breed.

In *Spanish* cocks the best bird in the class, 111 (Jones) was disqualified, his comb having been cut. First was a good bird with a fine face and a good comb. Second was a fine bird; 118 (Le Sueur) very good in face, and having a splendid lobe. In hens, first and second were two splendid hens, very fine in quality and rightly placed. The highly commended hens, 120 (Jones), 125 (Clews), and 126 (Andrews) were very good; in fact, the class was above the average. In coloured *Dorking* cocks first was a large sound-footed bird, good in colour, but a trifle long on the leg. Second was also large and good in shape, sound in feet and a fine bird. 187 (Cresswell) a good dark colour. Hens numbered eight; first being an enormous hen, very fine indeed, but rather old-looking. Second was a good, large, well-shaped hen of good colour. In *Silver-Grey* cocks first was a splendid bird, in beautiful colour and fine condition; second being a good bird, excepting having white ears. In hens first was a large hen in very fine plumage; second a capital bird of great size. In *White or Grey* cocks first was a *White* with a good comb and sound feet; second another *White*, much larger but not quite so symmetrical. In hens first was a fine large *White*, very good in shape; second was large but deformed in comb. Mr. Cresswell had another good *White* hen amongst the *Game* cocks.

In *Black Red Game* cocks first was a well-shaped bird, good strong head and bright colour; second was a rather leggy bird of fine colour, but shortish head and thick tail. In hens first had dark eyes, otherwise good. Second was a good shapely hen; 181 (Phillips) also a good well-made hen. In *Brown Red* cocks first was capital in colour, well laced on the breast, good in head and eye, but carrying his wings badly; he would be better with more bone. Second was a well-shaped bird, good in colour excepting being too black on the breast. In hens first was a well developed hen, being large and splendid in shape with very good gipsy face, but too coppery in hackle. Second was a good long-headed bird, also too dark in hackle; these were the two best. In *Game* cocks of any other colour a good yellow-legged *Pile* was the only entry. In hens first was a good *Pile*; second a *Duckwing* beautiful in colour.

In *Golden-spangled Hamburg* cocks first was very good in head, the breast beautifully spangled but lightish in bars; second was a splendid bird, grand in comb, ears, bars, and colour, excepting being too dark on the breast. We thought him the best bird. In hens first was well spangled, and a very rich-coloured bird; second was also beautifully marked and rich in colour, but not white enough in the earlobe. 206 (Rawnsley) a good hen. In *Silver-spangled* cocks first was a fine bird in splendid condition, good in head points and beautifully spangled; second going to another handsome bird, well marked and good in quality. 211 (Miss Brown) good. In hens first was very good in comb and ears, and very correct in spangling; a very beautiful hen. Second was rather light in mooning, but still a very good hen. Miss Brown's hen was good but too dark. In *Golden-pencilled* cocks first was very good, in fine condition, good in comb and ears, and tail well bronzed. Second we did not admire: he might have a natural comb, but it was not a pretty one. 220 (Beldon) was much richer in colour. In hens first was a very nicely pencilled hen; second also a well-marked bird. In *Silver-pencilled* cocks first was a beautiful bird, a trifle white in the face, but with good comb and ears, tail most beautifully laced, fine in carriage, and in splendid condition; second was also a very fine bird, beautiful tail and good comb and earlobes. In hens first was very attractive in her pencillings, and second was a well-pencilled bird. In *Black* cocks first was very good indeed, in capital condition; second was a glossy good-headed bird. In hens first was a splendid hen, very lustrous and in the highest condition; second was also a very handsome glossy hen. 246 (Rawnsley) a good hen.

In *Polish* cocks first was a fine and well-known *Silver*, very good in front of the crest; second a very good *Golden*, fine large crest, but a little wild. There were many fine birds in this class. 251 (Bloodworth) a very good *Silver* beautifully laced on the breast. 252 (Rawnsley) *Golden*, splendid in form of crest and very rich in colour. This bird we thought the best *Golden* in the class, if not the best bird. 258 (Smith) a good *Silver*, 254 (Thomas) a rich-coloured *Golden*, 257 (Huish) a pretty *Silver*. In hens first was a well-laced *Golden* and good in colour, but wanting a better crest. Second was an enormous-crested *Silver*. 260 (Rawnsley) a good *Golden*, getting rather faded now; 261 (Smith) a good *Silver*, 262 (Weaving) a well-coloured *Golden*, 264 (Partington) a good *Black*.

In *Houdan* cocks first was a good large well-marked bird, good in comb and crest; second was rather dark, but large, and good in head and feet. In hens first was splendid in crest and a very large bird, well shown, and one of the best we have seen lately; second a very fine hen with a large and well-shaped crest. The highly commended hen we also thought very good, and equal to second.

In *Crève Cœur* cocks there was only a single entry, a fair bird. In hens there were only two—first a grand bird, very fine in crest, and large; second was large and a good hen. In *Malay* cocks first was a grand, tall bird, dark red in colour, and in good show condition; second was a good bird of fair size. In hens first was of the fashionable colour, a large bird and of good quality; second a leggy hen of good colour.

In *Minorca* or *Andalusian* cocks first was a very fine *Minorca*; second another good bird of the same breed. In hens, first an *Andalusian*, very well-laced bird; second a good *Minorca*.

In *Leghorn* cocks first was a very fine *Brown* with a capital comb and ears; second a good *White* but rather yellowish. In hens first a fine *Brown*; second a good *White*; 810 (Bradbury) a good *Brown*.

In *Sultan* cocks first and second were both good well-crested birds, with not much to choose between them. In hens first was very good, splendid in crest; second attractive.

In Any other variety cocks first a good dark-legged *Black Coch*, second a capital *La Flèche*; and in hens first a fine *Plymouth Rock*, second a good *Black Coch*.

In *Cochin*, *Brahma*, or *Langshan* cockerels, first was a very forward *Buff Coch*, too mealy on the wing; second a promising *Light Brahma*. In pullets of these varieties, the first was a very handsome *Light Brahma*, the best chicken in the lot; and second a capital well marked and very promising *Dark Brahma*; 853 (Nickolls) a pretty *Buff Coch*; and 858 (Breeze) a good *Light Brahma*. In cockerels of any other breed first was a fine large *Dark Grey Dorking*, and second a good *Brown Leghorn*; and in pullets a fine large *Dark Dorking* was first, and a good *White Leghorn* second.

In *Aylesbury Ducks* first and second were good pens, first being much the largest, but second had the best coloured beaks. In *Rouens* first were very large, a splendid pair; second good, but the Duck "down behind" or ruptured. In *Pekins* the winning pairs were both very fine, first being in splendid condition. In Any other variety a good pair of *Carolinas* were first, and a capital pair which had travelled from France second. Rev. W. Serjeantson's beautiful pair of variegated *Teal* were unfortunately entered amongst the *Pekins*.

Turkey cocks and hens were both good classes, and the winners all fine large birds, the cock which won first being an enormous bird and in admirable condition.

In *Geese* first a very fine *Toulouse Goose*, and second a very large *Emden gander*.

In *Sebright Bantam* cocks, first was a well-laced *Golden*, though rather large; second a very good *Silver*, beautifully laced. 419 and 420 (Rev. W. Serjeantson), were two fine birds, *Golden* and *Silver*. In hens first was a very good *Golden*, beautifully laced; second a very beautiful *Silver*, very narrow in lacing. 428 (Stephens), a beautiful *Silver*; 425 (Lloyd), an equally handsome *Golden*. In *Black Bantam* cocks first was a smart little fellow, good in comb and ears; second a good bird with a fine head. In hens first and second were both good little hens, the three highly commended hens being also good; the last (Mudie), very small. In *White* cocks first was a fine bird in good condition, second also good and very small; both were clean-legged and rose-combed. In hens only the two prize pens were entered, both were good and of the same variety as the cocks. In *Game* cocks was a good *Black Red*; second a *Pile*, but willow-legged. In hens first a capital *Black Red*, and second a *Duckwing*.

In the *Pigeon* classes the competition was generally good, although the duration of the Show deterred many exhibitors from sending their best birds. In *Black Carrier* cocks first was a capital well-made bird, possessed of admirable head properties; second was also a good bird. In hens first was an excellent bird, very good in wattle; second also a hen of good properties, as was also 486 (Yardley). In cocks of any other colour first was a grand *Dun*, second another very fine bird of the same colour. In hens first a fine *Dun*, second a good *Blue*, highly commended a good *White*. In *Pouter* cocks first was a splendid *Blue*, second another very fine *Blue*, 504 (Wood), a *White* of good quality. In hens first a very fine *Blue*, second a good *White*. *Kunts* are a class which seem to us not to be sufficiently appreciated. Their enormous size should cause them to be a very useful breed; we should like to see well-filled classes of them more frequently. Here there were five entries, and first went to a very good *Silver*, second to a fine large *Blue*. In *Blue* or *Silver Dragoons* first and second went to good *Blues*, neither of them very dark in face. 520 (Osmond) was a capital gipsy-faced bird. In Any other colour first a good *Blue Chequer*, second a nice *White*. The *Yellows* were conspicuous by their absence. We missed Mr. Wood's here. In *Trumpeters* both prizes went to mottled birds. In *Fantails* the prizes went to beautiful *Whites* of very good quality. 539 (Yardley) was a good *Blue*, the rest all *Whites*. In *Barbs* first was a very fine *Black* of very good head properties, second a very good *Red*. 540 (Burton) and 547 (Fulton) were good *Blacks*, and 548 a capital *Yellow*. *Archangels* were five in number, and the winners good lustrous birds. In *Jacobins* both the winners were *Yellows* of fair quality. In *Turbits* the winning birds were *Blues*, both being good. 565 (Sutton) and 571 and 572 (Wood) were

in the order named—Red, Blue, and Black, all good. In Tumblers first a very fine Almond hen, second a good Kite. In Owls first and second were beautiful Silver English. In Nuns the winners were both black-headed, first being a bird of superior quality. In Magpies first a very good Black, second a capital Red, rich in colour. 598 (Harvey), a good Yellow. In Short-faced Antwerps first was a very good Red Chequer, second a fine Silver Dun, both in fine plumage. In Homers, cocks, the prizes fell to Blue Chequers, and in hens there was only one with which had to be content with a second prize. In Any other variety first was a fine Blue Frillback, second a handsome Satinette.

POULTRY.

COCHINS.—Cinnamon and Buff.—Cock.—1. A. E. W. Darby. 2. E. Clatworthy. ehe. H. Tomlinson. Hen.—1. C. Bloodworth. 2. R. P. Percival. Partridge feathered.—Cock.—1. R. J. Wood. 2. Mrs. J. Turner. Hen.—1. R. J. Wood. 2. E. Tudman. White.—1. Miss M. A. Bullock. 2. A. E. W. Darby. Hen.—1. J. D. Lang. 2. R. R. Fowler & Co. BRAHMAS.—Dark.—Cock.—1. J. Wood. 2. J. Long. Hen.—1. T. F. Ansell. 2. J. Wood. Light.—Cock.—1. J. & W. Birch. 2. T. F. Ansell. Hen.—1. S. Onions. 2. J. & W. Birch. LANGSHANS.—Cock.—1. Mrs. R. H. Birch. 2. A. C. Croad. Hen.—1. K. W. Knight. 2. Mrs. R. H. Birch. SPANISH.—Cock.—1. R. Newbitt. 2. Lady Allsopp. Hen.—1 and 2. J. Woods. ehe. C. Clews. DORKINGS.—Coloured.—Cock.—1. E. Burton. 2. Mrs. Radclyffe. Hen.—1. B. Smith. 2. O. E. Cresswell. Silver-Grey.—Cock.—1. O. E. Cresswell. 2. Mrs. Radclyffe. Hen.—1. O. E. Cresswell. 2. H. Beldon. White or Blue.—Cock.—1. J. E. Pilgrim. 2. O. E. Cresswell. Hen.—1. O. E. Cresswell. 2. W. Badger. Blue-breasted Red.—Cock.—1. W. T. Garne. 2. T. M. Hopkins. Hen.—1. J. H. Weeks. 2. W. T. Garne. Brown-breasted Red.—Cock.—1. J. B. Weeks. 2. J. H. Weeks. Hen.—1. E. Martin. 2. J. C. Cock. Any other variety.—Cock.—1. J. B. Weeks. Hen.—1. J. B. Weeks. 2. D. W. J. Thomas. HAM-BURGHS.—Golden-spangled.—Cock.—1. R. W. Bracewell. 2. H. Beldon. Hen.—1. H. Beldon. 2. R. W. Bracewell. Silver-spangled.—Cock.—1. H. Beldon. 2. J. Rawnsley. Hen.—1. H. Beldon. 2. J. Rawnsley. Golden-pencilled.—Cock.—1. J. Rawnsley. 2. P. L. Mills. Hen.—1. H. Beldon. 2. J. Rawnsley. Silver-pencilled.—Cock.—1. H. Beldon. 2. J. Rawnsley. Hen.—1. H. Beldon. 2. W. L. Bell. Black.—Cock.—1. J. Rawnsley. 2. H. Beldon. Hen.—1. C. F. Copeman. 2. H. Beldon. POLISH.—Cock.—1. H. Beldon. 2. J. Partington. Hen.—1. S. W. Thomas. 2. H. Beldon. HOUDANS.—Cock.—1. W. Nickolls. 2. E. J. Wingfield-Stratford. Hen.—1. E. J. Wingfield-Stratford. 2. W. Nickolls. CREEVE-COURE.—Cock.—1. R. Pound. Hen.—1. J. J. Maiden. 2. R. Pound. MALAYS.—Cock.—1. Rev. A. G. Elliott. 2. S. Sambrake. Hen.—1. Rev. N. J. Ridley. 2. Mrs. J. Rawnsley. MINORCAS OR ANDALUSIANS.—Cock.—1. J. Harwood. 2. H. Elston. Hen.—1. S. Ashwell. 2. E. Burton. LEHORN.—Cock.—1. E. Gibbs. 2. Bradbury Bros. Hen.—1. Bradbury Bros. 2. E. Gibbs. SULTANS.—Cock.—1. Mrs. Muir. 2. H. Beldon. ehe. S. H. Shorrocks. Hen.—1. H. Beldon. 2. C. Eyles. ANY OTHER VARIETY.—Cock.—1. W. Badger. 2. G. de Faye. Hen.—1. A. Stevens. 2. Mrs. J. Turner. CHICKENS.—Cochin, Brahma, and Langshans.—Cockered.—1. S. Sambrake. 2. G. B. C. Breeze. Pullet.—1. A. Bigg. 2. Horace Lingwood. Any other variety.—Cock.—1. G. M. Morecraft. 2. R. H. Foster. Pullet.—1. S. & J. H. Newick. 2. R. H. Foster. DUCKS.—White Aylesbury.—1. R. R. Fowler & Co. 2. J. Hedges. Rouen.—1. J. & W. Birch. 2. J. Partington. Pekin.—1. R. R. Fowler & Co. 2. W. Nickolls. Any other variety.—1. H. Yardley. 2. J. Bagg. TURKEYS.—Cock.—1. Mrs. J. Lewis. 2. J. & W. Birch. Hen.—1. W. Wykes. 2. Mrs. J. Lewis. GESE.—Gander or Goose.—1 and 2. J. & W. Birch. BANTAMS.—Gold and Silver Selfridges.—Cock.—1 and 2. J. W. Lloyd. Hen.—1. Rev. W. Serjeantson. 2. J. W. Lloyd. Black.—Cock.—1. J. Rawnsley. 2. F. Davies. ehe. H. Stephens. Hen.—1 and 2. T. F. Phelps. White.—Cock.—1. J. Rawnsley. 2. H. Stephens. Hen.—1. J. Rawnsley. 2. H. Stephens. Game.—Cock.—1. Mrs. J. E. Gunn. 2. D. W. J. Thomas. Hen. 1 and 2. E. C. Phillips.

PIGEONS.

CARRIERS.—Black.—Cock.—1. W. C. Phillips. 2. E. Burton. Hen.—1. E. Burton. 2. R. Fulton. Any other colour.—Cock.—1. R. Fulton. 2. H. Yardley. Hen.—1. E. Burton. 2. R. Fulton. POUTERS.—Cock.—1. R. Fulton. 2. R. Woods. Hen.—1. R. Woods. 2. J. D. Lang. RUNTS.—Cock or Hen.—1 and 2. J. S. Price. DRAGONS.—Blue or Silver.—Cock or Hen.—1. J. Allen. 2. E. Burton. Any other colour.—Cock or Hen.—1. J. Allen. 2. F. R. Sutton. TRUMPETERS.—Cock or Hen.—1. H. Yardley. 2. R. Fulton. FANTAILS.—Cock or Hen.—1. J. Playstead, jun. 2. Rev. W. Serjeantson. BARS.—Cock or Hen.—1. R. Woods. 2. F. R. Sutton. ARCHANGELS.—Cock or Hen.—1 and 2. W. A. Stevens. JACOBS.—Cock or Hen.—1. F. R. Sutton. 2. C. Norman. TURBITS.—Cock or Hen.—1. H. W. Webb. 2. J. Weaver. TUMBLERS.—Cock or Hen.—1 and 2. R. Fulton. OWLS.—Cock or Hen.—1 and 2. R. Woods. NUNS.—Cock or Hen.—1. R. Woods. 2. J. F. Harvey. MAGPIES.—Cock or Hen.—1 and 2. A. Stevens. ANTWERPS.—Short-faced.—Cock or Hen.—1 and 2. H. Yardley. HOMERS.—Cock.—1. G. Webb. 2. R. Woods. Hen.—2. W. H. Dammam, jun. ANY OTHER VARIETY.—Cock or Hen.—1. R. Fulton. 2. R. Woods.

HOW TO TEACH CANARIES TO SING.

IN reply to "Mrs. H., Wolverhampton," respecting teaching Canary birds to sing, two modes may be adopted—namely, one by placing a young bird under a good songster, and the other by the aid of a flageolet or bird-organ, if you wish your bird to sing a tune. The first method is very easily accomplished if you are possessed of a strong healthy young cock bird, and likewise a good two or three-year-old schoolmaster. Hang the box cages side by side upon the wall so that the birds cannot see each other, and the young cock will very speedily learn his lessons. It is seldom one hears of Canaries in this country being taught with an instrument to pipe tunes. In the first place, you will have to get a tutor who can play a flageolet and who can command unlimited patience. If this matter can be overcome, then you can adopt the *modus operandi* of an old and valued authority, who says, "Next to the Nightingale the Canary sings best, and has the strongest voice of any little bird. When young they easily learn what they are taught, as airs and tunes on the flageolet. For my part I prefer them before the Nightingales, because the Nightingales are much harder to rear than Canary birds; and besides, when a man has so far succeeded as to breed up one among many that will die under his hands he must make several sorts of paste and other food to treat them, whereas the Canary is easily provided for in the way of food when well weaned from the hen. Besides, the Nightingale, after all the pains taken in feeding and rearing, generally sings but one short season of the year, whereas Canaries are continually warbling. For these reasons I think the Canary ought to be preferred, notwithstanding the Nightingale's notes are somewhat more harmonious."

"The time when a Canary is to be put into a separate cage to be taught is eight or ten days after he feeds alone, and not as many do, who take him out the first day he feeds alone without allowing time to gain strength. They unmercifully shut him up in a box, being a sort of cage so-called, with some little holes at certain distances, so that the bird becomes nearly stifled for want of air. That poor little creature being thus deprived of sufficient air, which is almost as necessary as food to strengthen the body, grows melancholy and pines away and often dies in a few days. To succeed better observe this method: A fortnight at soonest after your bird has been taken from the hen, if you perceive he begins to warble and appears healthy, put him into a cage covered with a very thin transparent linen cloth for the first eight days in a room out of the hearing of all other song birds, and play to him upon a small flageolet, the notes of which should not be too high, for if too loud the bird will not fail to follow the same tone, which being repeated several times a day will so dry up his lungs as to cause him to grow lean and most likely die in a few days."

"At the end of a fortnight take away the thin linen cloth which covers the cage, and supply it with a piece of thick green or red serge, and leave the Canary still in the same place till he perfectly learns what you teach him. Some are much more apt to learn than others, taking to their lessons in two months, whilst some will be six months; but you must have patience when you resolve to teach them a tune, for without it nothing can be done. When you give the bird food, which must be sufficient for two days at least, it must be done by candlelight and not in the daylight, so that he may not be distracted, but may learn what he is taught sooner. As for the tunes, he must be taught only one fine prelude and a choice easy air; when he is taught more he is apt to confound them, and being taught too much at a time his memory becomes overburdened, and he knows not perfectly what he sings. Besides the distemper of moulting, which lasts above two months, diverts the bird somewhat from his lessons, and consequently tends to make him somewhat forgetful of the tunes taught with so much trouble."

"Do not follow the notion of those who may think that the more lessons they give their birds every day improves them the more; it tires them more and makes them uneasy. Five or six lessons a day are sufficient for a Canary, though he be ever so much disposed to learn; besides the trouble would much outweigh the pleasure if a man were to be continually about his birds. You must therefore give a bird two lessons in the morning when you rise, another lesson or two about noon, and the same before you go to bed. The morning and evening lessons do the bird more benefit than those in the middle of the day, because at those times, when all is still, the birds' attention is less diverted, and they better retain that which is taught them. At every lesson repeat the tune nine or ten times, going through it perfect without repeating the first part twice. The grey Canary of a good breed is stronger and apt to learn better than those of a lemon colour. You must not pretend to teach two Canary birds in the same room, much less in the same cage, because they will distract each other, and the time will be lost both to the pupil and teacher."

"The difficulty of teaching a Canary to sing a tune by the aid of a flageolet may be overcome if a bird-organ be obtained. I know an instance of a bird being so taught in Derby, and to such perfection too, that it was with difficulty that the piping or song of the Canary could be distinguished from the instrument. Mule birds of the Canary and Goldfinch cross make fine songsters placed under a good singing Canary. The notes of the learners become much improved by the blending of some of the Goldfinch notes in the song of the birds, and such bred birds are generally more vivacious than Canaries. Some of the very best songsters I ever had were brought up within the hearing of the Goldfinch, Linnet, and Canary, and they were Mules of the Canary and Goldfinch breed. If an opportunity should occur that you can have a young Canary placed within the hearing of a Woodlark, and the Canary learnt some of its notes, you would then have all that you could desire in the way of a cage-songster.—GEO. J. BARNESBY.

VARIETIES.

THE BATH AND WEST OF ENGLAND SOCIETY'S SHOW.—Although the Exhibition that closed at Worcester on Monday last was on the whole one of the finest ever held by this old and important Society, yet the weather was for the first two days very unfavourable for visitors, and the attendance was consequently limited. Friday was tolerably fine, and Saturday also, when visitors flocked to the Show in great numbers, nearly 50,000 passing the turnstiles, besides exhibitors and privileged persons. Monday was also fine and the attendance good, so that notwithstanding the gloomy prospect of the first few days it is hoped the undertaking will prove financially successful.

— CALEDONIAN APIARIAN SOCIETY.—The seventh Exhibition of honey, hives, and bees will be held at Kelso in connection with the Highland and Agricultural Society's Show on July 28th and three following days. The schedule comprises thirty-four classes, in most of which substantial prizes are provided and many medals,

including the silver medal of the Highland and Agricultural Society for "the best hive for observation purposes, all combs to be visible on both sides, stocked with bees and their queen." Mr. Robert J. Bennett, 60, Gordon Street, Glasgow, is the Secretary.

LEG-WEAKNESS IN CHICKENS.—A correspondent in the *Prairie Farmer* states that leg-weakness in any form among young chicks can generally be cured if taken in hand when first discovered, but when an old bird is unable to walk kill it as soon as possible. When young chicks go moping and squatting around, and stagger when they walk, you may conclude that they are troubled with cramp, caused by damp runs and by exposure to cold dews and rains. Removal to a dry warm place, and cayenne pepper given daily in the food, will usually effect a cure in a short time. Sometimes rapidly growing birds fall in the legs when they are four or five months old; this is the true leg-weakness, and is caused by a lack of the bone-forming material in their food. To prevent this weakness see that the young fowls have plenty of crushed oyster shells, or lime in some shape, and give bone meal in the food occasionally.

HARVEST OF FLOWERS.—The *Corriere Mercantile* of Genoa states—"Accounts from the Riviera announce that the harvest of orange blossoms is exceptionally abundant. At Nice a large quantity has already been distilled. Roses realize 80 centimes a kilo. If the fine weather which we have now continues buyers will not know where to store their merchandise."

THE TURNIP FLY.—Will "A. W. E." (see page 424) kindly inform me how the peat charcoal is used, and the quantity per acre? My fear is that if put into the box of the sowing machine along with the turnip seed the two will become separated by the jolting of the machine, and thus cause seed only to be sown in one place, and in another charcoal only.—G. P.

A PLEA FOR BEES—FEEDING IN JUNE.

THE failure in bee-keeping last year and the unfavourable weather we have had this year up to the present time (June 7th), urge me to remind the bee-loving community that feeding bees should not be suspended while the cold weather or north wind lasts. Bees here have not gathered an ounce of honey for many weeks, while some hives are full of bees and brood. Hives in this state require a great amount of food. Half a pound of sugar made into good syrup, say a pound of syrup a day, is not too much for a large hive. Without generous feeding hives ready for swarming will go worse, eggs will not be set, bees will be discouraged, and their activities will be paralysed to a certain extent. Last year the bee keepers of England and Ireland—Scotland, too, I fancy—lost many hives from inattention to the wants of the bees, which were starved to death. Let it not be so this year. Bees are worth more than their keep. Sugar is cheap. Why, then, stint and starve our industrious servants? Constant and generous feeding is necessary. Two years ago the weather became favourable on the 17th of June, when some of the best hives gathered 7 lbs. of honey each a day.—A. PETTIGREW.

TO WHAT EXTENT CAN BEES BE IMPROVED?

THERE probably is not an apiary in the United States, containing twenty colonies, but what the owner thereof is compelled to acknowledge that certain colonies do better than others nearly every year in producing honey, as we often hear it remarked, "If the whole apiary could have done as well as such a colony I should have had a big yield." Some contend that the hive and strength of colony has all to do with it, but I am inclined to think that the race of bees has the greater influence over these things, and that certain traits of character exist in certain colonies of bees that do not in others. If this is so, there is a chance for improvement in our bees, and I am inclined to think that it will be more to our credit in the future to strive to improve on the bees which we have, rather than to keep importing stock. But how can we accomplish this improvement? I know of but one way at present for the majority of us to accomplish this, and that is through the queen. A few cases have been reported where the drones have been brought into subjection, so that an improvement could be made by a selection of drones, but a majority of those who have tried fertilisation in confinement have only made a failure of it. Thus we have only the queen to aid us in the improvement as a certainty. Well, such being the case, how shall we proceed? I do not know that I can give my views better than to relate some of my experience.

About seven years ago I began to turn my attention to this matter, and adopted the following plan. At the close of the honey season I struck an average of the number of pounds of surplus honey produced by the whole apiary, and then all colonies which did not come up to the average were marked, as well as those which produced the very largest amount. This, you will see, requires a record kept of each hive by some means. Those that were marked as not coming up to the average were united, either in the fall or spring, with others that had produced an average amount or above, if such uniting was deemed advisable through colonies

light in bees or scarcity of honey. Of course, we always destroyed the poorest queen and retained the other. If all were not disposed of in this way, we superseded the inferior queens by those reared from the colonies marked as producing the very largest amount. All queens were reared, as far as possible, from those producing the largest yields of honey; and so, by following this plan and rearing the most of our queens, as given in the March "American Bee Journal," our bees have been improving as regards honey-gathering qualities instead of retrograding.

As far as possible we have selected our best-blooded Italians to breed from, always, however, keeping an eye to business rather than to colour. But during these seven years we have found other points worth looking after as well as honey-producing, such as good disposition, keeping brood in compact shape, remaining quiet during the winter, &c.

Our attention is just now turned in another direction. The readers of the Journal will remember that it was claimed that the honey which drew the gold medal at the National Convention in 1877 was gathered by black bees; one of the reasons given for so claiming being that black bees made whiter-looking honey or whiter-looking comb than the Italians. We discovered in 1876 that we had one colony of Italians which so sealed their honey that it was superior in appearance to that of the black bees. In 1877 this colony produced upwards of 800 lbs. of box honey, and the most of the honey in the crate drawing the medal was selected from these 800 lbs. Here was a chance to improve our bees in another direction, as we all know that the appearance of comb honey has a great deal to do with its sale, and as I had but one colony that produced more box honey than this I thought it something worth trying for. The queen, being quite old, was superseded in 1878, but from the cells left in the old hive at swarming we reared a few queens, only one of which came up to our ideas of excellence in every way. From her we reared some very fine queens last season, and propose, if possible, to stock our yard mostly with this strain of bees the coming season. These bees have also, as a rule, wintered well. They are not as light-coloured as some, but as most of the young queens are nearly duplicates of the mother, we are satisfied on that score. Thus every apiarist, if he will keep his eyes open, will find desirable points in certain colonies of his bees which he can improve upon, and by adopting the plan as given above his apiary can be steadily advancing in worth to its owner. The only drawback that there is to certain improvement in any direction with bees is our inability to control the drones. Then let us try with more zeal than ever, the coming season, to make fertilisation in confinement a success.—G. M. DOOLITTLE, *Borodino, N.Y.* (in *The American Bee Journal*.)

OUR LETTER BOX.

BUFF COCHINS AND BRAHMAS (F. F. F.).—We cannot advise you with confidence, not knowing all the surroundings; but what you state indicates that the birds are too fat. Try giving them less stimulating, such as substituting pollard for barley meal, and no whole corn. As to the Geese, purchase a gander from a totally fresh strain, and sell those you have.

BEES' ENEMIES (J. G.).—Sparrows are great destroyers of bees.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.
Lat. 51° 52' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.					IN THE DAY.				
	Baromet. teral 36 and Sea- Level.	Hygromet- er.		Direction of Wind.	Temp. at 5 ft. 1 foot.	Shade Tem- perature.		Radiation Temperature.		Rain.
		Dry.	Wet.			Max.	Min.	In sun.	On grass.	
1890.	Inches.	deg.	deg.	deg.	deg.	deg.	deg.	deg.	deg.	In.
May 31	30.380	56.3	47.5	57.2	67.2	40.3	105.2	34.0	—	—
June 1	30.188	58.2	49.0	N.N.E.	57.0	55.6	49.1	62.6	45.1	0.250
Tu. 2	30.137	56.6	52.3	N.N.E.	57.2	63.7	44.5	124.0	37.1	0.082
We. 3	30.041	58.6	58.7	N.	54.9	65.2	48.8	116.0	43.4	—
Th. 4	29.900	55.3	58.3	N.	55.2	69.6	50.1	83.9	50.2	0.125
Fri. 5	29.877	51.6	48.3	N.	54.4	66.7	48.1	113.6	48.1	—
Sat. 6	30.007	56.0	49.0	N.	55.5	66.4	38.3	114.7	54.2	0.184
Means.	30.065	55.4	50.4	—	55.3	62.3	45.6	102.9	41.7	0.571

REMARKS.

30th.—Fair, pleasant, calm day, sunshine only at intervals.
31st.—Dull morning; rain commenced 10 A.M., continued until 6 P.M.; cloudy, cool evening.
June 1st.—Sunshine in morning, heavy shower 1.40 P.M., slight drizzle in evening, cool day.
2nd.—Dull cold morning, sunshine and slight showers at intervals; fair but cold dull evening.
3rd.—Fair but cool sunless day; rain after 11 P.M.
4th.—Cool and overcast, little sunshine and breezy; fine evening.
5th.—Cold dull morning, bright sunshine in afternoon, wet evening.
The long drought ended on the last day of May, and cool showers have fallen since.—G. J. SYMONS.

COVENT GARDEN MARKET.—JUNE 9.

THERE is some improvement in trade, Peaches and Nectarines being in demand. Grapes are cleared at low quotations, and Strawberries have experienced a severe fall. All classes of vegetables are plentiful, and there is no alteration in the prices quoted last week.

WEEKLY CALENDAR.

Day of Month	Day of Week	JUNE 17—23, 1880.	Average Temperature near London.			Sun Rises.	Sun Sets.	Moon Rises.	Moon Sets.	Moon's Age.	Clock before Sun.	Day of Year.
			Day.	Night.	Mean.							
17	TH	Chertsey and District Show.	72.6	47.3	59.9	3 44	8 17	2 17	h. m.	10	0 48	169
18	F	Scottish Fanny Society's Show, Edinburgh.	72.1	50.4	61.2	3 44	8 18	3 39	0 19	11	0 56	170
19	S		70.8	48.5	59.6	3 44	8 18	5 4	0 45	12	1 9	171
20	SUN	4TH SUNDAY AFTER TRINITY.	72.1	49.9	61.0	3 44	8 18	6 26	1 30	13	1 22	172
21	M	[mittices at 11 A.M.]	74.1	50.4	62.3	3 45	8 18	7 39	2 8	14	1 34	173
22	TU	Royal Horticultural Society—Fruit and Floral Com.	73.7	49.0	61.3	3 45	8 19	8 34	3 12	15	1 48	174
23	W	Leeds and Burton-on-Trent Horticultural Shows.	72.7	47.2	60.0	3 45	8 19	9 16	4 30	16	2 0	175

From observations taken near London during forty-three years, the average day temperature of the week is 72.6°; and its night temperature 48.9°.

DOUBLE PYRETHRUMS.



REAT improvements have been effected in these flowers since the first appearance of the semi-double forms from Germany; but at no period during the past twenty years has this improvement been so marked as within the last three or four years, and never was the demand so great for plants as it is now.

Double Pyrethrums had their rise during what may be termed the bedding-out epoch in floral history; and for a time the massing of tender flowers in gardens during the summer months was so general that the brilliancy of the plants employed eclipsed the more sober beauty of hardy plants. But "bedding-out" reached its zenith, and then followed its gradual decline, and with that decline commenced the rise in popular favour of several hardy plants that had for a time been comparatively neglected. Double Pyrethrums, however, can scarcely be included in the category of neglected flowers. There has been no absolute decline in the quality of the varieties nor in the demand for plants, but their rise has been slow, and the prediction which accompanied their introduction that they would in form equal the finest Chrysanthemums has scarcely yet been fulfilled; but it is not too much to say that we are on the eve of its accomplishment. In symmetry and nearly in size the finest flowers now equal Chrysanthemums, while in some colours they surpass them, and there are distinct signs that incurved Pyrethrums will be seen in our gardens.

In diversity of form and colours, and in the number and distinctness of named varieties, double Pyrethrums have now at the least an equal right to be included in the category of florists' florists with Anemones, Ranunculuses, Gladioluses, Hollyhocks, Pentstemons, and Polyanthuses. They are also quite as easily cultivated as those flowers, are more certain to succeed than most of them, and are as valuable for decorative purposes as any. They are adaptable for culture in beds, borders, and pots, and it has recently been proved that they can readily be forced into flower during the earliest months of the year. So far as I know their adaptability for this purpose was first proved by my brother in the gardens of the Hon. A. Leslie Melville at Branston Hall, where I saw plants on the shelf of a small cool stove showing their flowers freely last February, and the experiment proved, as is narrated on page 397, a complete success. I have had plants flowering finely in pots in May, and at that time good specimens are valuable for conservatory decoration and cut flowers, and are also effective in mixed collections of hardy flowers for exhibition, as was shown by Mr. Douglas at the Royal Horticultural Society's Show last week, for he staged some very good examples in his beautiful group, and the large Aster-like flowers of the Pyrethrums appeared to considerable advantage among the elegant and highly attractive Aquilegias.

As shrubby border flowers these Pyrethrums are particularly suitable, as they are not nearly so liable to be eaten by slugs as many other plants, while rabbits leave them

almost till the last, and they do not do this with delicate morsels. But the best mode of culture is to grow the plants in beds in the same manner as Carnations are grown. In the case of very small plants as received from the nurseries the plan indicated is essential; and the soil being good, and due attention given to the plants, grand blooms are produced. When the plants become large they can be divided and planted in good-sized clumps at the front of shrubberies and be left to take care of themselves; they there produce smaller flowers abundantly, and continue for a number of years.

Yet while I have found double Pyrethrums as hardy as Phloxes and Delphiniums, and to survive the winter with the same impunity as those flowers, all other cultivators have not had the same good fortune. "WYLD SAVAGE" has recorded on page 438 some serious losses, and there can be few readers of the Journal who do not sympathise with that great admirer of flowers, enthusiastic cultivator, and genial writer under the circumstances of his failure. Other letters of the same nature are before me, the writers of which desire to know the cause of their Pyrethrums "going off," and ask for cultural instructions that will lead to success.

Without knowing the conditions of culture pursued it is not possible with any precision to state the causes that have led to failure in the cultivation of any plants or crops, and the subject can only be alluded to in a general manner; but an examination of it may possibly suggest the cause of some failures, and perhaps also suggest a remedy. In stating the conditions requisite for growing these plants satisfactorily, it may be said generally that they require much the same treatment as Carnations as to soil and position, but they thrive well in lighter soil and drier positions than do those flowers.

The first essential in the culture of Pyrethrums is well-drained soil. They cannot endure an excess of moisture, yet during the growing season require copious supplies of water; and the position cannot well be too open. The soil should be made good to a depth of 2 feet, manure being placed chiefly a foot below the surface, and for enriching the upper portion of the soil nothing is better than bone dust. This fertiliser with a little salt is a valuable addition to the soil for Carnations in dry districts; but salt is less necessary for Pyrethrums. If the soil of the garden is old, light, and contains much humus, the top spit should be removed and fresh loam added, which is better than manure for such soil, as it induces a firmer and less succulent growth. For insuring this desideratum full exposure to the air is also necessary, and if the plants are grown in mixed borders they are, during a season like the last, apt to be injured by the exuberant growth of other plants. Under these conditions the foliage of the Pyrethrums is soft and undeveloped, and the plants are liable to decay after the first severe frost to which they are exposed. This is the case with all Pyrethrums, not excepting the Golden Feather. If plants of this popular "bedder" are crowded and shaded in the summer they almost invariably die in the winter, but if grown in an exposed position they live. Double Pyrethrums should, therefore, be grown in open beds and not in overcrowded and shaded borders.

The time of planting is also important. "WYLD SAVAGE" does not say when he obtained his small plants from the nursery, but if he received them in late autumn and planted them at once no one need be surprised that they did not survive the past severe winter. When planted late they have not time to become established in their positions, and are thus peculiarly liable to "go off." The first plants that came under my notice some years ago arrived in small pots from the Continent in October. To have planted them then would have risked their destruction, and to have wintered them in a greenhouse would have had much the same effect—they would have been weakened instead of strengthened, and when planted out would have dwindled away. A medium course was adopted—they were plunged in ashes in a light frame with the young stock of Carnations, the lights of the frame being propped-up during wet weather and drawn off on dry days. They were frozen during the winter, but not being wet they sustained no injury, and were planted out in spring. Every plant prospered. No protection has been given since; and although they have been exposed to two winters when nearly all the Roses in the same garden were killed, the Pyrethrums are as healthy as ever. Previously to planting they were well prepared by being stood outside in their pots for a time, and when placed in the ground they commenced growing at once—not declining as plants do that have not been properly prepared. Pyrethrums, then, should be planted in spring, or at any rate soon enough in summer to take possession of the ground and make their growth in the beds where they are to stand the winter. They are then, if the soil is not excessively wet—waterlogged by the want of drainage—quite safe, and need no protective care. Taking them up in the autumn is rather a dangerous process, as if they have not time to make fresh roots before the winter, whether in pots or the open ground, they are liable to decay.

The time of planting small plants of choice varieties in spring is also important. No given day, nor even week or month, can be named for the operation. If a perishing east wind prevails, as it has done recently for many weeks, let the plants remain in a sheltered position until a change to genial weather occurs, then plant them out. There can be no better time for planting from pots than the present—I mean the small plants as sent out in pots by nurserymen. They may be planted a foot apart and there bloom, and the spring following every alternate plant may be removed and planted in other beds. Spring, just when fresh growth is commencing, is the time for division and increase; and the divisions, if with plenty of roots attached, may be planted out at once, but any that are small and with few roots are best established in pots. They may be also increased from cuttings.

A rather firm and sound calcareous loam is the best for Pyrethrums; this provided, with a full exposure to the air, the plants may be left without further protection than covering the surface of the ground with good manure in November, the same as giving a dressing to Strawberry beds—the mulching never to be removed, as it prevents the soil drying during hot weather in summer.

When large blooms are required the flower stems must be thinned out, and the plants be supplied with liquid manure after the buds are visible.

The following are fine varieties, and include some that were exhibited by Mr. Kelway in his splendid collection at South Kensington last week, and there are many others equally good:—Boule de Neige, Carminatum plenum, Carneum plenum, Rubens, Dr. Livingstone, Haage et Schmidt, Imbricatum plenum, Impératrice Charlotte, Madame Billiard, Michael Buckner, Mons. Barral, Mrs. Dix, Niveum plenum, Rev. J. Dix, Roseum plenum, Mont Blanc, Royal Standard, Wilhelm Kramer, Gloire d'Italie, Rose Marguerite, Marquis of Bute, Garibaldi, Fulgens plenissimum, and Cleopatra.—J. WRIGHT.

BIENNIAL STRAWBERRIES IN POTS.

MANY years ago my attention was called to an excellent crop of fine fruit upon a long row of Strawberry plants in pots in an orchard house, that had borne an equally fine crop of fruit in the same position the year before. The hint was treasured in the memory and subsequently turned to good account, not by being invariably followed, but as a resource in time of difficulty. Last season was one of those times, for the low temperature of the summer retarded growth so much that runners came much too late to enable us to secure fine plants from them. That this would be the case was so apparent, that when the yearling Strawberry plants after fruiting were re-

moved from the unheated Peach house in June, instead of being turned out of the pots and planted in the open garden, they were placed upon a bed of coal ashes far enough apart to admit light and air freely among the foliage, kept free from runners and weeds, and watered regularly with strong clear artificial liquid manure. Plenty of large, deep green, stout foliage, and full plump crowns, were the results. In October the pots were plunged to the rim in the leaf soil, and a few bundles of dry fern placed in an adjacent lodge to throw loosely over the plants in frosty weather.

An abundant crop of fruit now ripening once more proves the value of a plan which thus enables us to so easily overcome the difficulties of an ungenial season, and also to economise labour at one of the busiest seasons of the year.—EDWARD LUCKHURST.

FASHION IN GARDENING.

A FEW years ago bedding-out was all the fashion. No one would look at an old-fashioned garden; while now, if we may judge by the various communications in some of the horticultural journals, bedding-out is the most pernicious practice extant.

In a humble way I am a cultivator of herbaceous plants, and I am incurring great expense and taking immense pains to form a good collection, so that anything I may write on the subject matter of this paper proceeds not from an adverse but a favourable critic; and my opinion is that to condemn unreservedly the employment of Pelargoniums, Calceolarias, Verbenas, Ageratums, and other bedding-out plants because they are not hardy is as reasonable as for a bedder-out to refuse a corner of his garden to herbaceous plants because he considers them little if at all better than weeds.

My flower beds are arranged on terraces, and they are devoted, with the exception of a few Tea Roses, to herbaceous plants. And now, What flowers are there to be seen? Two varieties of Aquilegia, the yellow and white Bachelor's Buttons, two Bearded Irises, Dielytra spectabilis, Arabis, two varieties of Lychnis, Dodecatheon Meadia, an Eryngium, a Tradescantia, Solomon's Seal, Thrift, one Antirrhinum, a few Polyanthus, one Rocket, and two Tea Roses. As I was dressing this morning a terrible voice proceeded from a neighbouring room, "Well, this second terrace is indeed a dull one; I don't see any flowers." I have to own this is so, and ask, What is to be done? The more I labour to have flowers to bloom at all seasons the more I fail. I once devoted the whole of the front of the house to Roses, when the same voice used to call out for nine months in the year, "Oh! how tired I am of those dreadful sticks. Of all the bad and selfish ways of growing flowers yours is the worst; to have sticks for ten months, and a few flowers which neither I nor the children may touch, for the other two." "Madam," I cry, "it shall be altered. If you want to have your garden gay with flowers all the year round all you have to do is to grow herbaceous plants. So we will buy some without delay." No sooner said than done, and during the year the bill for these amounts to just £100. Never mind; next May won't we have a show? Wait till then. May comes in due course, and instead of the jubilant praise, the exultant voice, the triumphant psæan, just towards the close of the month I hear the words I have before quoted. Well, the garden is dull, there can be no question of that; and I do not see how it can be avoided, for many varieties of herbaceous plants bear such small insignificant flowers that they can scarcely be seen a yard off; many also are inferior to wild flowers.

Here is a grand flower, I say to myself, as at last I find the crimson corymbs of Lychnis viscaria flore-pleno. Whilst I am admiring this I hear, "Father, there is a flower exactly like that in the Wotton lane, it is only a little more double than a Ragged Robin." I feel inclined to box that child's ears, but refrain for fear of the voice. Now tell me, Is an Eryngium as good as many wild flowers, or is a Polemonium any better than what the country people called the Cuckoo Flower or Lady's Smock? Then what a poor flower is a Centaurea and a Geum. There are glorious flowers to be met with in the herbaceous borders I know. Lobelia cardinalis, Rockets, Lilium candidum, Pæonies, Delphiniums, Potentillas, and Phloxes. But are there not, I ask it with great humility, are there not many weeds? Perhaps someone will say, Only buy the good flowers and leave alone the weeds. But I reply, How am I to find out which are which? The nurserymen's catalogues do not tell me, for all their plants are described as bearing beautiful flowers. Personal experience will take a lifetime. You must then buy a

lot of plants and sacrifice much room to them which will never repay you.

It is true I can turn out any number of these rejected ones into my wood, but then they all represent hard cash. Now bedding-out plants never at least disappoint you as to flowers. They may be formal, they may be vulgar in their glaring colours, but at least they give you flowers which you can see; therefore I do not think these useful and gay plants ought to be condemned in the unreserved and wholesale manner in which the votaries of fashion are now doing. I think that there is room for both systems, and that the man who follows one to the exclusion of the other is not availing himself of what all good horticulturists ought to do—viz., all the resources which benignant Nature lays at his feet.

The front of a house is the place for bedding-out, and it is consequently not the place for herbaceous plants. Some may think the two systems may be combined, but I join issue with them here. Herbaceous plants ought to line the margins of shrubberies, or the borders nearest the walks in the kitchen garden, or should have some retired part of the garden devoted to their culture. The few beds in front of the windows should be devoted to spring and summer bedding. In the spring bulbs should be employed, and in the summer bedding-out plants; then the lady of the house may see her beds gay with flowers for six or seven months in the year, and during three more she can find a few flowers in the herbaceous border. Of course where space is limited the two systems must be combined, and then the list of herbaceous plants must be a limited one, as only the grandest sorts must be employed. Fashion must not be followed, but in its stead common sense, or so at least it seems to—WYLD SAVAGE.

CULTURE OF ANTHURIUM SCHERTZERIANUM.

ALTHOUGH good specimens of Anthurium are not scarce it is often seen in not a very satisfactory condition. I have seen plants of it do very well for a time and then become unhealthy, which is mainly through the soil being soured; and that condition occurs through the old soil being retained when the plant is repotted, as the large amount of water it requires whilst in active growth will cause that condition.

I find the best month for repotting the plants is July, after they have done blooming. When the soil is ready, which should consist of two parts of brown peat with all the fine soil sifted from it, one part sphagnum, and one part charcoal and potsherds. The pots should be those commonly called panpots. Fill them half full of potsherds to secure thorough drainage. Turn the plant out of the pot and wash the roots thoroughly but carefully (this is essential). When repotting work the soil carefully among the roots, after which place the plant in a temperature of about 65° as a night temperature. Sprinkle the plants overhead four or five times a day, and shade well till they are established.—SOUTHERN GROWER.

HANDSWORTH NURSERIES, SHEFFIELD.

MOST of our large provincial towns can boast of having near them some large nursery more or less known to fame, different in their character, indeed, from our metropolitan establishments, but remarkable for their extent and varied character. The most important portion of our London nurseries is the large number and great extent of their glass, that of the provincial nurseries their outdoor cultivation; and it is of one of these, formerly known as Fisher, Holmes, & Co., but now Fisher, Son, & Sibray, that I wish to write about, having had an opportunity during the present month of visiting it.

Handsworth is situated about four miles from Sheffield, but the formation of the country between effectually screens it from the smoke and noxious vapours which its multitudinous furnaces are ever vomiting forth, without which protection, indeed, it would be utterly impossible to grow any tree or shrub out of doors. In the same way the Botanic Gardens and gentlemen's seats on the other side get somewhat of the same protection, so that one is surprised to find, in the neighbourhood of a town so well known for the extent and importance of its manufactures, so much vigour and freshness as exists. Probably the keen cold air of Yorkshire may have something to do with this; but whatever it is, the fact still remains. It would be, I think, utterly unnecessary to enter into the details of all things connected with a nursery of 200 acres. We all know that it has its large quarters of fruit and forest trees, its collections of shrubs and garden plants, its green-

houses in which a little, and sometimes a great deal, of everything that is grown is to be found; and therefore I leave all this to be conjectured, confining my observations to such things as especially struck me in going round, and which I considered worthy of note.

And were I asked, What was the most noteworthy thing in the whole establishment? I should say the manufacture of plants of *Lapageria alba*, for one can hardly call it by any other name. I had lately had the opportunity of visiting Mr. Beckwith's nursery at Edmonton, where the manufacture of plants of decorative *Pelargoniums* was carried on by tens and hundreds of thousands; but it is a different thing to propagate a hardwooded climber like *Lapageria alba* to producing by thousands stubby plants of the easily grown *Geranium*. I can well understand that the statements I may make on this subject will be received with an air of incredulity, but they are none the less true for all that, and, what is more, no secret is made of the method pursued. There are two large beds of it planted out in one of the greenhouses containing a certain number of old plants which form the parents of the marvellous young stock which in its thousands fills so large a space in the houses. The stems, which are thrown up from the roots in large numbers, are layered in the beds, and from nearly every axil a plant is produced. They very soon root, and are then cut off and potted. From nine plants not less than a thousand are raised in each season, and these, not little half-starved miseries, but plants not a twelvemonth old have now shoots varying from 6 to 12 feet in length, and these shoots very nearly cover the low-spaced house in which they are placed. And then what shoots are those on the old plants, with leaves as large as the palm of one's hand! Moreover, it opens out quite a fresh field in the growth of the *Lapageria*. There were pots here two years old which had eleven shoots on them; and may not growers of the plant find it best, in order to obtain such plants as they wish to have, layer the shoots in the large pots in which they are grown, and then get them to start from the axils underneath?—not, of course, taking them off to make plants, but leaving them there to throw up fresh shoots. Altogether it was the most successful and the most suggestive piece of propagation I have seen for many a day. I may add that as the foliage of *L. alba* and *rubra* are exactly alike, sometimes the latter has been in error sent for the former, but they are easily distinguishable; the bract-covering (I believe it is called) at the axils is always white in *alba*, and dark-coloured in *rubra*. I have heard of a grower near London who from his success in growing it is called "Lapageria Tom," but I think he must be contented to stand second to the Sheffield nursery at any rate. Next in interest to this as a matter of propagation was the wonderful stock of greenhouse *Rhododendrons* of the Princess Alice type, hybrids from *javanicum*. These we are in the habit of seeing long-legged awkward-looking plants, but here there were hundreds of plants of different ages, but all short, stubby, and as well covered with foliage as the common *ponticum* would be out of doors. How this is managed I do not pretend to say, but knowing as one does the tendency of the plant to run up, it was a surprise to see these wonderfully grown plants. Throughout the whole range of glass propagation was carried on with great success. Thus *Clematises* in three weeks made flourishing plants; and *Roses*, especially Hybrid Teas, were very successfully increased, large quantities of Mr. Bennett's progeny having been sent out during the past season.

Out of doors there was very much to see and admire, the collection of *Hollies*, comprising some sixty or seventy varieties, being grown and in very vigorous and sturdy health. In fact, as the trees are constantly moved and the climate is bracing in itself, a most sturdy growth is encouraged. The Handsworth silver-striped variety is well known as one of the most desirable of the variegated sorts and emanated from this nursery. Other varieties, such as *Doningtonensis*; *magnifica* (?) which bears racemes of berries nearly 2 feet long; *monstroea*, where all the edges are regularly turned in, almost meeting, and forming a kind of boat; *adpressa marginata*, *Ingrami*, *ovata*, were all in fine condition. Mr. Fisher says one of the best hedges he knows is that formed of *Cotoneaster Simmondsii* and *Holly*. By-the-by, in passing through the suburbs of Sheffield I saw a hedge round a villa garden some 40 or 50 yards long entirely composed of *Cotoneaster microphylla*. It had been planted against a fence made of wire netting, and had completely filled it up, making a dense and very beautiful hedge.

Have any of your readers met with the Parsley-leaved Bramble? for if not, I may be doing a kindness in noticing it.

To cultivate a Bramble might seem superfluous, but not more so than the Raspberry, and perhaps if the same care were bestowed upon it results equally good might be obtained. At any rate this variety is worth growing. I saw a plantation of it at Mr. Mark Firth's near Sheffield, and was told when H.R.H. the Prince of Wales was there as Mr. Firth's guest he was greatly pleased with it. The fruit is large and with an agreeable acid flavour, and is produced in large quantities. Its culture is similar to that of the Raspberry. The bearing canes are tied to a stake, and when the season is over are cut away, and the young shoots which come up from the root, as in the Raspberry, are then trained for next year's supply. They bear thus from the bottom to the top, and are, what the Raspberry is not, sure to produce a crop.

Amongst the curiosities I noticed on a low wall what Mr. Fisher called the sympathetic action of plants. There were planted close side by side two plants of Ivy, one green-leaved, the other golden; and wherever the green had got amongst the Ivy its leaves had become golden—there could be no mistake about this; and on the other side of the golden one a larger-foliaged variety had been planted in order to see the effect which it might produce.

Shrubs form a very special feature of this establishment, and several very beautiful things have been raised here, amongst which may be noticed the very beautiful and hardy variety of *Berberis stenophylla*. It is, I believe, a hybrid between *Darwinii* and *empetrifolia*, but much more hardy than the former while partaking of its abundant inflorescence, for during the past winter, when *Darwinii* has succumbed in such large quantities, the Handsworth hybrid has held its ground; while in Hollies, Rhododendrons, and other shrubs several interesting varieties have originated here.

I need not say that this is but a mere passing glance at an establishment rich beyond expression in many departments of horticulture, and that it would be idle for me to attempt to describe it. I have, as I have said, noticed only a few of the things which struck me; but I cannot omit to record the exceeding kindness with which I was received by Mr. Fisher, and the zeal and earnestness with which he entered into the immediate object of my visit to Sheffield—the promised Show of the National Rose Society for 1880, of which there is, I hope, a fair prospect it may be held there, and if so I am convinced it will be done well.—D., Deal.

SOUTH ESSEX HORTICULTURAL SOCIETY'S SHOW.

JUNE 11TH.

THIS flourishing Society held their annual bright and pleasant Exhibition at Knott's Green, Leyton, as on previous occasions, by the permission of the President, J. G. Barclay, Esq., who generously throws his beautiful garden open to the numerous visitors. The display of plants was very good, and many handsome well-grown specimens were shown. The classes were numerous, and the competition generally was fairly close and good. Amongst the exhibitors who contributed largely to the success of the Show were the following:—Mr. Donald, gardener to the President; Mr. Bones, gardener to D. McIntosh, Esq., Havering Park, Romford; Mr. Monk, gardener to W. Fowler, Esq., Leytonstone; and Mr. Douglas, gardener to F. Whitbourn, Esq., Loxford Hall, Ilford. Mr. B. S. Williams sent a large group of new and choice plants, which occupied one end of the tent and attracted much attention.

One of the principal features was the display of stove and greenhouse plants in the two classes devoted to them, most of the specimens being unusually healthy and vigorous. For specimens Messrs. Donald, Bones, and Douglas obtained the prizes in the order named, all very close in merit. Among Mr. Donald's plants were a handsome *Statiea profusa*, a good *Clerodendron Balfourianum*, and a fine *Adenandra fragrans*. Beautiful examples of *Pimelea mirabilis* and *Ixora floribunda nana* were noteworthy in Mr. Bones's collection, while Mr. Douglas showed a neat *Statiea profusa* and a bright *Epacris miniata splendens*. Mr. Monk had the best collection of four specimens, all in excellent condition; the prizes for single specimens in flower being obtained by Mr. Donald for a large well-flowered *Clerodendron Balfourianum*; and Mr. Douglas for a fine specimen *Bougainvillea glabra*.

Next in order of importance and merit were the fine-foliage plants, which were admirably represented, many of the plants exhibited being exceptionally vigorous, and in the case of some *Crotons* well coloured. The premier award for six specimens was secured by Mr. Monk with a fine collection, in which *Croton Weismanni* was particularly notable for the rich colour of the foliage; *Dieffenbachia Bausei* was also of great size and in good form, and *Croton undulatus* was similarly attractive. The other prizes in that class were obtained by Messrs. Douglas and Donald. Mr. Bones had the only group of four plants, and was adjudged

the chief prize for *Croton variegatus*, *Alocasia metallica*, *A. macrorrhiza variegata*, and *Dieffenbachia Bausei* in excellent condition. Mr. Douglas staged the best four Palms, which included handsome examples of *Kentia canterburyana*, *Areca lutescens*, and *Cocos Weddelliana*. Mr. Donald was second. The Ferns were well represented and generally in a fresh healthy condition. Mr. Douglas staged a good first-prize collection of six plants, a specimen of *Todea superba* being especially noteworthy. Mr. Bones was first with four fine plants; and Mr. Dover, gardener to A. Borwick, Esq., Higham Hill, Mr. Donald, and Mr. Merrett were the chief exhibitors of British Ferns, and obtained the awards in the order named. Mr. Donald also had a fine group of Tree Ferns.

There were several bright collections of Orchids, that generally indicated careful and judicious cultivation. Mr. Dover was placed in the chief position of honour with six plants, among which *Oncidium macranthum*, *Cattleya Moesii*, *Aërides Fieldingi*, and *Cymbidium eburneum* were especially remarkable. Second honours were adjudged to Mr. Douglas for very neat well-grown plants of *Dendrobium Devonianum*, *Masdevallia Harryana*, and *Saccolabium Harryana* among others. The third prize was obtained by Mr. Ship, gardener to J. B. Scott, Esq., of Walthamstow, with rather small but healthy plants. In the class for three specimens Messrs. Monk, Dover, and Ship carried off the prizes, Mr. G. R. Cox being awarded an extra prize for a neat collection of small plants.

The miscellaneous plants—such as *Coleuses*, *Pelargoniums*, *Calceolarias*, and *Gloxinias*—were numerous and attractive, the three former being exceptionally fine. Two handsome collections of six *Coleuses* were exhibited by Mr. Monk and Mr. Peters of Snarebrook, who obtained the awards in that order. All the plants were admirably fresh, the colours being very clear and rich; Mr. Monk staging fine examples of the varieties *Glow*, *Multicolor*, and *Sparkler*. The *Pelargoniums* were numerously represented. Mr. Douglas was first with six Show varieties, large plants and well flowered; Mr. Hammond, Stamford Hill, following with fair plants. The best four Show varieties were from Mr. Bones, who generally takes a high position with his productions in these classes. Mr. Mallet, Walthamstow, was second. The Zonal varieties were shown in good form, six collections being staged in the two classes. Mr. Day, Walthamstow; Mr. Crawley, Leyton; and Mr. Windley, Leyton, were the chief exhibitors of six plants, the prizes for four being secured by Mr. Barnes, Wanstead, Mr. Clark, and Mr. Sutton Abbott with healthy examples of good varieties. Mr. Bones worthily obtained the first prize for six *Calceolarias* in extremely fine condition, very dwarf in habit and most profusely flowered, the colours and markings of the blooms being such as to indicate an exceptionally good strain. Messrs. Foster and Wright followed with meritorious plants. *Fuchsias* and *Gloxinias* were in good form; Mr. Donald, Mr. Clark, and Mr. Monk taking the chief prizes for well-grown specimens.

Some good stands of cut flowers were shown by Messrs. Douglas, Monk, and Foster, and elegant table decorations were contributed by Mr., Mrs., and Miss Abbot. The fruit shown was of excellent quality, but the entries were not very numerous. Mr. Bones had the best dish of white Grapes, and the best six dishes of fruits. Mr. Darvill was first with black Grapes; Messrs. Donald and North staging first-rate Strawberries. Mr. Searing and Mr. Bones had good Melons, the latter also exhibiting six superb Royal George Peaches. Messrs. Donald, Bones and Douglas contributed collections of vegetables in praiseworthy condition.

The Show was attended by a very large number of visitors, the day fortunately proving exceptionally fine. All the arrangements were admirable; and great credit is due to Mr. Cox the Secretary, and Mr. Donald the Chairman of the Society, for the very efficient and satisfactory manner in which the Exhibition is managed.

EFFECTS OF THE PAST WINTER IN CORNWALL.

I WAS much interested in Mr. Landborough's remarks (page 409) on the plants growing out of doors in the south of Scotland, and was surprised that *Dicksonia antarctica* is there quite hardy. I always thought Cornwall was the only place in England where it is hardy, and even here it has to be protected through the winter. *Embothrium coccineum* has survived many of our winters quite unprotected, and is now about 16 feet high and in full bloom; another specimen in a different locality being 12 feet high. *Cordyline australis*, about 10 feet high, has lost all its leaves, which I suppose to be in consequence of its removal from the Scilly Isles, and not having had time to become established; but growth is starting and no doubt it will survive. *Aster argophyllus* is flourishing out of doors, and has stood proof against last winter. *Eulalia japonica zebrina* has proved quite hardy, and is a very beautiful striped Gramineous plant. *Phormium tenax Veitchii* had the tips of its leaves nipped with the wind, but not hurt seriously. *Hakea suaveolens* has escaped the winter with comparatively little injury. Of Gum Trees, *Eucalyptus globulus* was in full foliage

quite six weeks ago. The following plants, usually confined to the greenhouse and stove, have withstood the winter out of doors—*Fabiana imbricata*, *Leycesteria formosa*, *Hedychium flavum*, *Aralia papyrifera*, *Nandina domestica*, *Seaforthia elegans* (injured), *Desfontainia spinosa*, *Colletia horrida*, *Cassia corymbosa*, *Lilium giganteum*, *Maurandya Barclayana* now in full bloom, and *Calla aethiopica*. *Olearia stellata*, a very beautiful shrubby Composite, is now flowering outside; the heads are like Daisies. In "Notes on Camellias," &c., in the *Journal* some weeks ago I omitted to mention a specimen in the possession of T. S. Bolitho, Esq., at Trengwainton, Madron, larger than any other in the district, and it is, I am told, the first one brought into Cornwall.

I have noticed this year that there is a remarkable scarcity of Hawthorn blooms. Is this the case generally? Potatoes have been dug and Peas picked out of doors here more than a month ago.—W. ROBERTS, *Penzance*.

STRAWBERRY RUNNERS.

MANY runners are now being emitted from the old plants, and those who wish to secure a good stock of early young plants should look well after them. As there is generally an unoccupied piece of ground between the rows, it is a good plan to examine them once or twice a week and turn any straying runner into the direction of this space, as they grow better and form more roots than when close in to the old plants amongst masses of leaves.

Where runners are plentiful the weakest may be cut away at once. As soon as the young roots from the runners begin to penetrate the soil all that are wanted should be layered into pots. The required number of 3-inch pots are firmly filled with a mixture of loam and well-decayed manure. They are then taken to the Strawberry quarter, and every pot is sunk a little way into the ground close to every runner. The runners are examined, and any that have rooted into the soil are lifted with a trowel; a little hole is made in the soil in the centre of the pot to admit the roots, and the soil is then pressed firmly around them. A short wooden peg is placed to hold the runner firm until it has rooted into the soil. None are severed from the old plant until they have become established in the small pots. During the time this is being accomplished they must be examined daily in dry weather and receive abundance of water when needed. As soon as they are rooted they can be separated from the old plants and placed together until it is decided what is to be done with them. The best may be potted for fruiting in the spring, and the smaller will be excellent for making new plantations in the open quarters in autumn.—J. MUIR.

THE CULTIVATION OF THE EUPHARIS AND PANCRATIUM.

THE *Eucharis* is a plant to which any description would fail to do justice, and one which will well repay every care bestowed upon it, as with good management and a moderate stock of plants it can be had in flower at almost any time of the year. Being of such value for decorative purposes the following cultural details may be useful.

I will commence with the potting. The flowering bulbs are selected, and in making up a specimen all the largest are placed together. In March of last year I made up some specimens in pots 14, 10, and 8 inches in diameter, containing respectively twenty-five, fifteen, and eight bulbs each. The plants bloomed in August last year, and every bulb produced a scape of flowers—in all forty-nine, bearing nearly three hundred blooms. The soil I employ is composed of two parts turfy loam and one of leaf soil in a very rough state; to this I add plenty of silver sand, and mix well together. The pots require draining with great care, as the *Eucharis* is a water-loving plant during growth. Over the crocks place 3 inches of the most fibrous parts of the compost. Make this very firm to prevent the small soil being washed into the drainage; upon this place a layer of fine soil 2 inches in depth. The bulbs are then placed at equal distances all over the soil, and to do this well two persons are required—one to hold the leaves in an upright position while the other works in a little of the finest of the potting material until the roots are covered; then fill in with the roughest parts of the compost, burying the bulbs about 2 inches. I leave a space of 2 to 3 inches at the top of the pot for water, which will also allow a top-dressing. Place five stakes round the edge of the pot. Tie a piece of matting to

one of the stakes and coil it round all the others; this will prevent many of the leaves from falling off or turning yellow. Give a good watering, and plunge the pots in a gentle bottom heat if possible. Temperature for autumn and winter 60° to 65°, and 75° with sun heat. Spring and summer 70° to 75°, and 85° with sun heat. Syringe two or three times a day, and water carefully until the roots have taken to the new soil, then give water in abundance. When the bulbs have made new leaves and matured them, gradually withhold water, and remove the plant to an intermediate house, only supplying sufficient water to prevent flagging. In very hot weather they will require shading, or the foliage will be disfigured. When necessary remove them to moist heat, and plenty of bloom will be obtained. Liquid manure may be supplied once or twice a week, as this will increase the size of the flowers and assist the growth as well. I am quite satisfied with two crops of flowers in a year, and I should not advise anyone to flower their plants more frequently if they wish to keep them in good health. The stock may be readily increased by selecting all the small bulbs at potting time and placing ten or twelve in an 8-inch pot, subsequently shifting them into 10-inch pots, where they will attain a good size in about eighteen months.

The *Pancratium*, like the *Eucharis*, is a bulbous-rooted stove plant, the genus comprising many species of great beauty, natives of the East and West Indies. The subject of these notes—*Pancratium fragrans*—is very useful, and can be flowered twice in a year; but I only allow mine to flower once, and that at their natural time—viz., August and September. I grow five large bulbs in a 12-inch pot. The bulbs are shaken out of their pots every two years, all the small bulbs being removed. The same compost as for the *Eucharis* is employed, also carefully draining the pots. The bulbs are placed near the sides of the pots, as the blooms have more room to expand, the flowers falling almost into a horizontal position. Each scape should in staking be forced slightly outwards, or the flowers will be too crowded in the centre. Pot very firmly and syringe freely, maintaining a temperature of 60° to 80° when in the stove. Place the plants near the glass, and shade from very hot sun. Remove them to an intermediate house in June; reduce the supply of water whilst there, and every bulb will reward you with a scape of flowers. Small bulbs should be shifted as they fill their pots with roots. When in bloom remove the plants to a cool dry house, where the flowers will last much longer than in a warm damp house. This will produce plants fit for any exhibition.—JOHN MARSDEN, *Gardener to J. E. Cutler, Esq.*—(Read at one of the *Sheffield Gardeners' Meetings*.)

BORDER FLOWERS—ROCK CRESS.

It is quite cheering to see and hear that our old favourites are again taking their places in our borders, especially as they are so well adapted for spring gardening. Now is the time to make preparation for next season, and I have a word or two to say about the Rock Cresses or Arabises. I find them invaluable for beds and edging in my spring garden, and for clumps in the borders or on the rockery. The best I have is *Arabis lucida variegata*, at home everywhere and at all seasons. I regard it as one of the most effective plants for an edging that I know. It is easily increased by division in spring and autumn. Seed cannot be depended upon. *Arabis alba variegata* is also useful for edgings or ribbon borders; it grows taller than the above, and is increased in the same way. *Arabis precox variegata* and *A. procurrens variegata* succeed on the rockery. A mixture of good loam, leaf soil, and coarse sand, with efficient drainage and water when required, will meet their requirements. The Californian Rock Cress, *Arabis blepharophylla*, is a charming plant on the rockery, and should have a place in all collections. When well grown is very attractive. *Arabis alba* for masses in the winter cannot be dispensed with. It is readily increased by division after flowering, and by seed sown as soon as ripe. There are many species of this charming genus that are equally interesting to the cultivator of choice border flowers, the names of which may be found in the lists of the vendors of herbaceous plants.—CROSSWORT.

TRANSPLANTING PORTULACAS.—These are plants of the limited number that I find may be safely transplanted notwithstanding the very dry parching north-east wind and continuous drought we have had for some time. The strong fleshy foliage does not become parched as rapidly as some half-hardy

and tender annuals. In the prepared bed for these I bury the manure sufficiently deep, so that when the flowering begins to wane the roots may feed on it. The plants flower better on rather poor soil. I find a mixture of mortar rubbish excellent for transplanting them into.—W. J. M., *Clonmel*.

ROYAL BOTANIC SOCIETY.

JUNE 16TH.

THE second summer Show proved highly successful. Banks of Orchids, stove and greenhouse plants, elegant fine-foliage plants, and the grand groups referred to below, all served to constitute a most imposing display, of which the time at our disposal only enables us to give a very brief report.

ORCHIDS.—These were represented by several beautiful collections, especially noteworthy being that from Sir Trevor Laurence, Bart., Burford Lodge, Dorking, which was placed first in the amateurs' class for twelve specimens. It included grand examples of *Calanthe veratrifolia* with eighteen spikes; *Cypripedium* "Dominianum" with above forty flowers, a pan of *Cypripedium niveum* with nearly one hundred flowers, and the peculiar *Masdevallia bella* with twelve flowers; many others were also very fine. Mr. W. Reeves, gardener to C. Hart, Esq., Beaufort House, Lee, was second with a bright collection: a plant of *Masdevallia Harryana*, variety *Bull's Blood*, being especially beautiful. Mr. Heims, gardener to F. A. Philbrick, Esq., Q.C., Avenue Road, Regent's Park, was placed third with smaller but good plants. Mr. B. S. Williams gained the chief award in the nurserymen's class with a dozen handsome specimens; Mr. H. James, Castle Nursery, Norwood, following with rather small plants. The same exhibitors took a similar position with a collection of six, Sir T. Laurence being followed in the corresponding amateurs' class by Mr. Child, Garbrand Hall, and Mr. Heims.

Stove and greenhouse plants were numerous and well represented, all the collections being marked by great freshness and vigour. Mr. Tudgey, gardener to J. F. G. Williams, Esq., Henwick Grange, obtained the post of honour in the open class for twelve specimens with similarly beautiful plants to those he staged at Kensington, and in equally good condition. Messrs. Jackson & Son, Kingston-on-Thames, followed with a neat collection in which a fine *Anthurium Schertzerianum* was especially noticeable. Messrs. B. Peed & Son, Norbury Nurseries, Streatham, took the third position, and an extra prize was most deservedly awarded to Mr. Donald, gardener to J. G. Barclay, Esq., Knott's Green, Leyton, for a collection of great merit, one specimen of *Statice profusa* not being rivalled in the whole exhibition. In the smaller amateur classes Mr. Tudgey, Mr. Donald, and Mr. Hinnell, gardener to F. A. Davis, Esq., Anglesea House, Surbiton, were awarded the prizes in the order named, all contributing neat and well-flowered plants. Messrs. Jackson won the chief position in the nurserymen's class. Heaths and fine-foliage plants were admirably represented by numerous collections of great merit, those from Mr. B. S. Williams and Mr. Child being particularly fine.

The only collection of six Roses was staged by Messrs. Paul and Son, Cheshunt, their specimens being in very fresh healthy condition; Miss Ingram, Paul, Veidier, and Charles Lawson were especially noticeable.

The two best collections of show and fancy Pelargoniums in the amateurs' classes were from Mr. Wiggin, gardener to H. Little, Esq., Hillingdon Place, Uxbridge, who obtained the chief prizes. His specimens were exceptionally fine, the varieties good, the flowers numerous, well formed, and highly coloured. In the corresponding nurserymen's classes Mr. C. Turner, Slough, held the position of honour with his usual fresh handsome specimens. Other exhibitors in their classes were Mr. J. Weir, gardener to Mrs. Hodgson, The Elms, Hampstead, Mr. Donald, and Messrs. B. Peed & Son, with fair collections but somewhat deficient in flowers. Mr. Catlin, gardener to Mrs. Lermite, Finchley, was first with six exceptionally fine Zonal Pelargoniums, grandly flowering, and most symmetrically trained.

GROUPS OF PLANTS.—The chief of these, as usual, occupied the four crescent-shaped mounds in the centre of the large tent, and were remarkably attractive. Very noticeable was that from Messrs. Veitch & Sons, Chelsea, which contained a large number of Orchids and handsome foliage plants most tastefully arranged, in the centre being a semicircular cluster of *Gloxinias*, intermixed with small specimens of *Adiantum gracillimum*, the combination of rich colours with such graceful foliage producing an admirable effect. Mr. B. S. Williams, Upper Holloway, contributed a handsome collection of plants, comprising numerous examples of the beautiful new forms now being sent out by that firm. Orchids, Crotons, and Ferns constituted the chief features of the group. Messrs. E. G. Henderson & Son, Pine Apple Nursery, Maida Vale, exhibited a novel but most pleasing group that attracted great attention. Over a hundred beautiful *Todeas* formed the bulk of the collection, and among these were speci-

mens of *Caladium*, *Odontoglossum vexillarium*, *Epidendrum vitellinum*, and *Masdevallias*, the bright tints of which most agreeably contrasted with the rich green hues of the *Todeas*. Messrs. John Laing & Co., Forest Hill, had an attractive collection of *Tuberosa Begonias*, *Crotons*, *Dracenas*, *Gloxinias*, &c., pleasingly arranged. Extra prizes were awarded to all these groups.

FRUIT.—This was shown in excellent condition generally, the exhibits also being numerous. For a collection of six distinct kinds Mr. Wildsmith, gardener to Viscount Eversley, Heckfield Place, Winchester, was placed first with Black Hamburg Grapes, well finished; fine President Strawberries, six beautiful Royal George Peaches, good Brown Turkey Figs, a neat Melon, Suttons' Lord Beaconsfield; and a handsome Smooth Cayenne Pine Apple. Mr. W. Robins, gardener to E. Dyke Lee, Esq., Hatwell House, Aylesbury, followed with small bunches of the same variety of black Grapes, but equally well finished; an Eastnor Castle Melon, and a dish of Dr. Hogg Strawberries being the chief features of the collection.

Seven baskets of black Grapes were exhibited, Mr. Woodbridge, gardener to the Duke of Northumberland, Syon House, being first with superb examples of Black Hamburg both in size of berry and finish. Mr. Bashford, gardener to H. Brenchley, Esq., Charlton House, East Sutton, was an admirable second; and Mr. Robins third with the same variety. Only three baskets of white Grapes were staged—namely, by Mr. Woodbridge and Mr. W. Mowbray, gardener to the Earl of Leven and Melville, Fulmer, Slough, who gained the prizes in the order named; the first with Muscat of Alexandria, fine but scarcely ripe, and the second with Buckland Sweetwater in very good condition. Seven collections of three bunches of Black Hamburg Grapes were staged, by far the best being those from Mr. Wildsmith, who was awarded the chief prize. Mr. Robins and Mr. P. Feist, gardener to R. J. Ashton, Esq., Bishopsgate House, Staines, following with bunches of average size. Mr. Bolton, gardener to W. Spottiswoode, Esq., Coombe Bank, Sevenoaks, was first in the class for any other black Grapes, with good examples of Black Prince, Messrs. Wildsmith and Mowbray taking the second and third positions with the same variety. In the class for three bunches of Muscat of Alexandria, Mr. John Maher, gardener to C. Alhusen, Esq., Stoke Court, Bucks, was placed first with good bunches but scarcely ripe. This was the only collection staged. For three bunches of any white variety there were eight entries, Mr. Bolton being first with Buckland Sweetwater well ripened; Mr. Robins second with Foster's Seedling fairly good; and Mr. Mowbray third with Buckland Sweetwater, very large berries but not fully ripe. Peaches, Nectarines, and Melons were also well shown, the two former by Mr. G. Osborn, manager to Messrs. Kays' nursery, Finchley; and Mr. W. Bones, gardener to D. McIntosh, Esq., Havering Park, Romford; and the latter by Mr. Bolton and Mr. Holliday.

Cut flowers were exhibited by Mr. Morse, Epsom, and Roses by the Rev. E. Fellowes, Wimpole, Rectory, Royston, and Mr. Hollingworth, Maidstone.

Extra prizes were awarded to the following exhibitors—Messrs. Hooper & Co., for cut flowers of hardy plants; Mr. H. Hooper, Bath, for Pansy blooms; Messrs. Kelway & Son, Langport, Somerset, for Pyrethrum blooms; Messrs. Henderson & Son for a group of *Calceolarias*; Messrs. Osborn & Sons for a collection of hardy plants; Mr. B. S. Williams for a magnificent group of *Nepenthes*, comprising over fifty plants; Mr. Wheeler for an elegant group of plants; Mr. A. Luff, gardener to R. B. Hyatt, Esq., Mount Ephraim Road, Streatham, for a large group of plants.

An additional attraction was provided in the corridor by the exhibition of annuals in pots from Messrs. J. Carter & Co., High Holborn, which will be in fine condition during the next fortnight. A large number of new plants were exhibited, for which certificates were awarded.

GARDENING IN INDIA.

ALTHOUGH I have never been in India, perhaps I may be able to make a few suggestions which will assist "A PARSEE" of Bombay in endeavouring to grow some of the fruits which are commonly grown in more temperate climates. There is something in acclimatisation well worth your correspondent's consideration. A friend once gave me some flower seeds and Melon seeds from India from which I raised plants on a hot-bed; but although amongst the flowers I thought I recognised some old familiar friends, they did not succeed very well and after a time died away. Seed from some intermediate place would, I think, have answered better. "A PARSEE" should look to Italy and the south of France rather than this country for his Apples and Peaches, or instruct a nurseryman here to procure them for him. The difficulty to contend with is not so much the excess of heat in the hot season as the extra warmth of the season of the year, which corresponds to our winter.

There is no proper period of repose, and that has a very injurious effect on some fruits, particularly the Vine. If

good showy canes were sent over from here in the autumn, or between that and Christmas, and planted out on arrival, perhaps they might produce a satisfactory crop the first year, and after that fresh plants could be obtained. The cost of carriage would not be very great. If that plan did not succeed Vines of the Muscat and Syrian varieties obtained from Egypt and neighbouring countries would be the most likely to answer. The same remarks fully apply to the Strawberry. If strong plants of suitable kinds were sent from here in pots packed in moss but open at the top, and planted out directly they arrived in India, they would probably produce a crop the first year if they did not do much good afterwards, but whether it would answer "A PARSEE'S" purpose to do this will be for him to consider. The fruit would be a valuable acquisition if he could make the plan answer. Some of the American varieties, such as Hovey's Seedling, would probably stand a powerful sun better than ours.

Shading trees is a good idea, but why not try it for trees planted out? I fear "A PARSEE" would have much trouble with the fruit trees in pots; at certain times of the year they would require watching twice a day.—AMATEUR, *Cirencester*.

CHAPTERS ON INSECTS FOR GARDENERS.—No. 6. NEW SERIES.

THE wasps form the remaining division of the predaceous stinging Hymenoptera, and they are again separable into two groups that differ markedly from each other. The first group, which comes nearest to the ant tribes that were the last we considered, contains the sand and the wood wasps called "Fossors" or diggers; herein they differ from the true wasps, because they in some cases construct nests in the earth, yet they look out for holes that exist ready formed. Amongst themselves the "Fossors" vary much in appearance. Some of them are more bee-like than wasp-like; others nearly resemble Ichneumon flies, but they are generally moderate-sized insects. Taken as a group we may place them unhesitatingly amongst the friends rather than the foes of the gardener, if it can scarcely be said they render any remarkable service to him, the reason being that although it is their habit to store up for their young a variety of insects—such as caterpillars, flies, beetles, ants, and aphides, they collect these from all sorts of places as well as gardens. But several species of the sand wasps, for example, destroy thousands of caterpillars each year; some of these caterpillars doubtless belong to moths which we commonly reckon amongst the garden pests. In colour and markings many of these wasps present a pleasing appearance to the eye, since they are spotted and banded with black, red, cream colour, and yellow; the wings are small, but the insects in flight move in a brisk and yet cautious way, since they are so frequently on the watch for objects of capture. The males perform the usual office of male individuals amongst insects, nothing more; their habit is to fly about, while the females have all the responsibility of providing both a dwelling and food for their progeny. There are persons possibly who would shake their heads over a peculiarity that distinguishes certain species, where we find what seems to be an instinctive, if necessary cruelty, for the mother wasp is storing away the insects that are to sustain her young brood, wounds them with her sting in such a manner that these prisoners are rendered incapable of moving, yet they are not then actually deprived of life, probably because the grubs prefer "fresh meat." The habits of these wasps differ, however, for some store up insects alive and uninjured, while a few species supply their grubs with dead insects.

One of the larger genera amongst the sand wasps is the genus *Pompilus*, where the abdomen is joined to the thorax by a very short stalk; the legs are long also, and the colour usually black or dusky. *P. exaltatus* is an abundant species of lustrous black hue with a red abdomen. These are fierce and active insects, and nearly all the species provide spiders for the food of their grubs, seizing commonly those wandering spiders that seldom make webs; but they have been observed to fly boldly into the webs of the large garden spider and bear away the occupant. Since both have poisonous powers the wasp, we may presume, dexterously hovers above, and then seizes the spider that it is unable to defend itself successfully. To save themselves fatigue the females sometimes take advantage of holes in decayed wood, or when they dig their nests they seek for sandy banks where the soil is more easily loosened. These species, as do all the sand wasps that confine themselves to a particular kind of food when hunting in behalf

of their young, display great sagacity in the collection of their store. Each cell has its provision carefully added when the egg is laid, and, supposing this be of spiders, one, two, or more are secured and hidden in according to the size they may be. An observer of the doings of a French species of this group found that some of the web-making spiders that were occasionally attacked by wasps kept sharply on the watch for their aerial foes, and managed in several instances to secure them by a cord of silk, thus "turning the tables" upon the foraging insects; for if the spider is conqueror the wasp is killed and eaten. The Sphegidae are principally caterpillar-killers. One of them, *Ammophila sabulosa*, is sometimes called the sand wasp; though but one of many, it is more noticeable than others of the group, being nearly an inch long. Having bored for itself a cylindrical burrow in sand or sandy earth, the wasp brings a caterpillar which it thrusts to the bottom, and upon this the egg is laid. More caterpillars are added, and the opening being closed the wasp flies off to repeat the operation till she has no more eggs to deposit. *Mellinus arvensis* is another common sand wasp that has no English name; this is smaller, banded with bright tints of green, blue, and red. The females in this species hunt flies of the Dipterous order, and they enlarge the extremity of the burrow into a small chamber. The late Mr. F. Smith, a very successful student of our bees and their kinsfolk, writes of this species—"It is amusing to see four or five females lie in wait upon a patch of cow dung until some luckless fly settles upon it. When this happens a cunning and gradual approach is made—a sudden attempt would not succeed; the fly is the insect of quickest flight, therefore a degree of artifice is necessary. This is managed by going past the victim slowly, and apparently in an unconscious manner, until the poor fly is caught unawares and carried off by the *Mellinus* to her burrow." The grubs of this species, as indeed do most of those of sand wasps, live through the winter and spring, the perfect insects emerging towards the end of summer.

Amongst the Crabronidae, where many of the species have yellow legs, and where several have been supposed to resemble hornets in shape, although much less in size than those, there exists some diversity in habit. There are species, like the preceding, that resort to sandbanks, but a few burrow into the mortar of venerable brick walls, and a larger number prefer the stems of Rosaceous plants. As they do not, seemingly, touch plants that are in a healthy and vigorous condition, these wasps ought not to find within the domain of the garden suitable stems or branches upon our Roses. During July and August the wasps of this family are frequently observable in gardens, where they sit on the flowers enjoying the sunshine, perhaps also the honey, in their leisure intervals, or they seek amongst the flower beds the food required by their descendants. Several species hunt aphides, although they cannot do very much towards the diminution of the hosts of these pests. *Crabro lutei-palpis*, a wall-builder, is one of the wasps known to be hostile to aphides; *Pemphredon lugubris* is another, so named, not from any lugubrious tendencies, but because it is of a dusky hue. Some of the insects of this species have been seen diligently engaged in collecting aphides, which were scraped together into a little ball and then borne to the burrow. *Oxybilus uniglumis* is a very common species, remarkable for this peculiarity, that it seizes flies and takes them not by pursuit on the wing, but by walking amongst them. Going to some spot where flies congregate, the wasp strolls up and down unconcernedly, watching an opportunity to spring on an individual, which is then carried off and another obtained similarly. Several of the Crabronidae are so small that they can lodge their eggs and provision for the future grubs within a good sized straw. An example is the active *Stigmus troglodytes*, which generally breeds in thatch, and thrips of various species are its usual food.

Exceptional habits are perceivable in the last family of the sand wasps we notice—the Philanthidae. In the genus *Philanthus* there is but one British species, *P. triangulum*, a very handsome insect, about half an inch long and of decidedly waspish aspect. In France it is an insect that is disliked by bee-keepers, with good reason, for it rushes upon and kills the hive bee. Where this sand wasp is plentiful, supposing that its attacks are limited to the bee with which we are most familiar, it must certainly effect the destruction of a perceptible proportion of the tenants of the hives, since every female *Philanthus* places in her burrow half a dozen bees at least. As far as the history of the species is known in these islands, it does not appear to show that it is hostile to our bees; the customary contents of the burrow are sundry wild bees of the

genus *Andrena* chiefly. *Cerceris* is the name of the other genus in this family. These wasps, of which *C. arenaria* is a common example, dig deepish holes in the ground, and mostly store them with beetles, strangely choosing some of the small and hard weevils for the food of their soft grubs. Mr. F. Smith suggested that by lying in the earth, the outer integuments of the beetles are softened before the grubs need to attack them.

The true wasps, upon which our comments must be brief, are readily distinguishable from the Fossores by a longitudinal fold or doubling along the fore wings. There are two families, one solitary, the other social in habit. In the first family, the Eumenidae, are thirteen British species. The burrows are formed by the females on the same plan as those of the Fossores, the diggers in sand or pith, only these more frequently group all their cells instead of scattering them in different spots. Sandbanks are resorted to by some; others pierce into Reeds, the branches of Brambles, provisioning their cells with small larvae of various kinds. One of these solitary wasps collects mud, which is used to make an external nest, secured to a twig. Social wasps in Britain are sometimes divided into ground wasps and tree wasps, but the former are often to be noticed as the architects of large nests secured to the roofs of out-houses. This is usually the common wasp (*Vespa vulgaris*), most plentiful of our seven species; though the wood wasp (*V. sylvestris*), rather smaller, is tolerably abundant in many places, being attached to branches, or to the corner of a roof or the angle of a wall. Each colony of wasps, which towards the end of the season may number some thousands, consisting of males, females, and a great preponderance of neuters, is started in the spring by one parent wasp that has survived the winter. Hence the progress of the nest and its inhabitants is gradual. The males, however, unlike the drones of the hive, are diligent in a variety of ways. One singular circumstance in the history of social wasps is, that when winter approaches the nurses drag from their cells and kill all the young grubs that then remain. All the wasps are too well known to us as the enemies of fruit, though it may be pleaded in their behalf that they destroy yearly a large number of flies. The hornet (*V. Crabro*), largest of the wasp tribe, is a determined foe of the smaller wasps; but it is a curious fact that the increase of this dreaded species is kept under by some parasite or enemy about which we have no information at present, but there does not exist proof that the sting of the hornet is so dangerous as it is supposed to be. Colonies of these are small, being of only a few score individuals.—C.

NOTES AND GLEANINGS.

AMONGST the numerous examples of skilful culture at the Royal Horticultural Society's great Show last week, especially noticeable were the handsome blooms of *PYRETHRUMS* exhibited by Messrs. Kelway & Sons, Langport, Somerset. Rarely is such a fine collection of these beautiful and fast-improving flowers to be seen at exhibitions, and in consequence they attracted great attention and admiration from the visitors. All the best varieties were represented, including several that are being sent out for the first time. The colours ranged from rich crimson and carmine hues to delicate shades of pink and pure white, the flowers being of symmetrical form, very full, and of great substance. In addition to the *Pyrethrums* were some blooms of enormous *Carnations*, named the Red and Crimson *Souvenir de la Malmaison*. These were over 5 inches in diameter, globular in form, and very striking. The colours were also good, especially the crimson, which was particularly rich.

THE work of BEDDING-OUT IN THE LONDON PARKS is still in progress, and will not be completed before the end of the present month. The work is not done hurriedly, but well, success depending, as in all other artistic work, on the carrying out of small details. The plants employed in the carpet beds are selected with great care, and only those of the exact size are planted in the same lines, circles, or panels, and they are planted with mathematical precision as to distances. It is this care in planting that imparts to the beds their highly finished appearance that is so much appreciated by the thousands who admire them during the summer and autumn months.

TRAINED to a wall with a south-east aspect in the Royal Gardens, Kew, a fine specimen of *ABELIA TRIFLORA* is now flowering profusely. It is a handsome shrub with opposite sessile downy leaves, and terminal clusters of flowers that are of a bright crimson hue before opening, but white

when fully expanded. It succeeds in any ordinary garden soil, but requires to be planted against a wall, when it affords a beautiful supply of flowers for cutting.

MR. B. COWAN, gardener to Sir Henry Clavering, Bart., Axwell Park, Blaydon-on-Tyne, has been appointed superintendent of the cemetery at South Shields. There were 108 candidates for the appointment. Mr. BOLLAM of Ferndene succeeds Mr. Cowan at Axwell Park. Mr. E. FISTER, late foreman at Whinney House, Gateshead, has been appointed gardener to Mrs. Joicey at Blenkinsopp Hall, Northumberland.

A CORRESPONDENT, writing to us on *SPERMANNIA AFRICANA*, says this very effective greenhouse plant is not so often to be seen as its merits deserve. It does admirably with cool treatment, and once established in a 12-inch pot will flower beautifully for years with an occasional supply of liquid manure, and during the winter months when most desirable.

ONE of the prettiest dwarf Evening Primroses is *ENOTHERA TARAXACIFOLIA LUTEA*, a yellow form of the Chilean species, a number of plants flowering in Mr. J. T. Riches' nursery at Tooting, and they clearly showed the attractive character of the variety. It is very dwarf—only a few inches high, with leaves cut like those of the common Dandelion, as the name implies; the flowers are very large and of a bright pale yellow colour. The plant is quite hardy, and succeeds admirably either in beds of ordinary garden soil or in pots, and may be readily increased by seed.

A CORRESPONDENT, alluding to the EFFECTS OF THE WINTER IN KENT, states that *Deodaras* have never suffered so much before, many specimens that have been planted twelve to fifteen years being killed. The Bays are also very bad; *Roses*, many dead, and many others nearly so. Strawberries that have often been gathered at the end of May will not be ripe this year until the end of June.

THERE is now a very attractive display of the numerous forms of *IRIS GERMANICA* in Mr. Parker's nursery at Tooting. The collection includes some scores of varieties, presenting an astonishing diversity in colours and markings. Some of the most remarkable forms are the following:—*Victorine*, *Aureum*, *Queen of May*, *Sultan*, *L'Innocenze*, *Antiope*, *Augustus*, *Bridesmaid*, *Comte de St. Clair*, *De Bergé*, and *Arnold*.

A RATHER singular error occurred in our columns last week in reference to the death of M. NUYTENS VESCHAEFFELT, of which we had a special intimation, who was described as the adopted son of the "late" Mr. Jean Verschaffelt. This venerable horticulturist still lives in the esteem of hosts of friends. The error is the more peculiar since it also occurred in the columns of a contemporary.

THE Rose Show in connection with the TORQUAY HORTICULTURAL SOCIETY is fixed for the 9th of July, when Mr. Jowitt of Hereford and Mr. Baker of Heavitree will compete for the challenge cup, which is valued at £25. A silver cup will also be offered by Messrs. Curtis, Sanford, & Co., and special prizes by the Cranston Nursery and Seed Company, Hereford.

WE regret to record the death of Mr. W. W. E. WYNNE of Peniarth, Towyn, Merionethshire, which occurred on the 9th inst. in the sixty-ninth year of his age. Mr. Wynne, who was Deputy Lieutenant for his county, belonged to a very old Welsh family, and was a gentleman of refined tastes and antiquarian research. He also took great interest in arboreal and horticultural pursuits, and for many years has been an occasional contributor to our columns.

IN Mr. W. H. Gower's nursery, Lower Tooting, we recently observed some healthy young specimens of the distinct and beautiful *AZALEA ROSEIFLORA*, which Messrs. Rolleston imported from Japan several years ago. It is so very distinct from the indica type that it might almost be considered as a species, and Mr. Gower thinks it will prove hardy when on its own roots. The plant is compact in habit and flowers most profusely; the blooms are neat, in form somewhat resembling a partially opened Rose bud, quite double, and of a pleasing rosy salmon tint. Whether employed for decorative purposes generally or for yielding a supply of flowers *Azalea roseiflora* will undoubtedly prove extremely useful, and deserves to be widely grown. One valuable quality it possesses is the persistence with which the flowers are retained upon the stems, and this eminently fits it for cutting from, as the corollas do not fall but wither on the stalk.

— A DAILY paper, alluding to the PACKING OF STRAW-BERRIES FOR MARKET, says it is a curious fact that the practice of putting all the choicest fruit at the top and the spoilt fruit underneath is one of honourable antiquity, for it was alluded to in the form of a political apologue by Queen Elizabeth about three centuries ago. Speaking of her Ministers the Queen said, "When first chosen by me all goes well, for they do put forth their best virtues like the large Strawberries in market baskets; but by-and-by small vices and faults appear in them like the littler fruits hidden beneath the big."

— HIGHLY worthy of note and cultivation is the YELLOW GHENT AZALEA NANCY WATERER. The shrub is of free growth, good habit, and floriferous, while the flowers are of excellent form and conspicuous by their brightness of colour. This variety is alike suitable for growing in pots for forcing purposes, and for permanent effect in prominent positions in the shrubbery, where it shows to great advantage surrounded with the dark foliage of evergreens. There are many varieties of this useful type of Azaleas of great merit, and undoubtedly Nancy Waterer is one of them.

— WE have received the following MONTHLY PUBLICATIONS from Messrs. Cassell, Petter, Galpin, & Co. Part 16 of "Familiar Garden Flowers," containing illustrations of the Pentstemon and Michaelmas Daisy, with descriptive letter-press; part 39 of "Familiar Wild Flowers," with illustrations of the Snowdrop, Snowflake, and the common Avena; and part 10 of "European Ferns," with a coloured engraving representing *Cryptogramma crispa*, and numerous woodcuts.

PORTRAITS OF NEW AND NOTABLE PLANTS.

MORMODES OCANE.—"M. Ocanus was discovered by the collector Schlim in the province of Ocana, at elevations of 4000 to 5000 feet, and subsequently collected by M. Kalbreyer. It has been cultivated by Messrs. Veitch, with whom it flowered magnificently in October, 1879."—(*Bot. Mag.*, t. 6496.)

GENTIANA SEPTEMFIDA var. CORDIFOLIA.—"Gentiana septemfida has a wide range in distribution from Tauria and the Caucasus to Persia and the Altai Mountains, ascending to 9000 feet in the Caucasus, and the var. cordifolia inhabits the mountains of Armenia. It is a well-known cultivated plant under the name of G. gelida."—(*Ibid.*, t. 6497.)

RUELLIA PORTELLE.—"Named in honour of Senor Francisco Portella of Compos (Rio de Janeiro), who sent it to Kew in a Ward's case with various other valuable living plants of Brazil. It appears to be a very free-growing species, well adapted for winter decoration as a stove plant; and, like others of its order, requiring to be kept quiet when flowering and fruiting are over."—(*Ibid.*, t. 6498.)

LYTHRUM GRAEFFER.—"A South European plant, with a very extended geographical distribution, from the Azores and Canaries to Portugal and Morocco, and thence eastward to Asia Minor and Northern Syria. It does not occur anywhere north of the Alps except in Western France, but has been introduced into South America and other countries. It affects wet places, and when grown in a pot standing in a tank or pan of water, it forms a strikingly ornamental plant from the profusion of its bright pink blossoms, which stud the numerous slender branches, and which appear in succession for several weeks. The Royal Gardens are indebted to Mr. Joad, F.L.S., of Wimbledon, for plants which flowered profusely during the month of August."—(*Ibid.*, t. 6499.)

POLYGONUM AMPLEXICAULE.—"Amongst the Himalayan Polygonums none exceeds P. amplexicaule, which is unrivalled for graceful habit, foliage, and colouring combined, and it is further a plant of such easy cultivation that it ought to be a garden favourite. It occurs under two varieties, a white and a red-flowered, of which the white has usually a longer and more slender raceme, with more distant flowers. P. amplexicaule extends through the whole range of the Himalaya, from Murree in the extreme north-west, where it ranges from 6000 to 8000 feet of elevation, to Sikkim, where it reaches 11,000 feet and upwards; it does not occur in the Bhotan collections of Griffith, nor has it been found in the Kharis range. It was introduced into the Horticultural Society's Gardens from those of Tahrurpore, by Dr. Falconer, in 1835 or 1836. It flowers in September and October."—(*Ibid.*, t. 6500.)

IRISES.—No. 9.

IN many gardens Irises are now contributing a large share of floral beauty to the borders, and especially fine are the very

numerous forms of *Iris germanica*. I was recently in a garden where a large and complete collection of the best varieties are grown, and the effect produced by the varied tints of the different forms was most beautiful. Certainly there were not those rich and peculiar hues that mark the English and Spanish bulbous Irises, but there was an astonishing diversity of shades. Some were of the most delicate tint imaginable, the falls and standards being of one colour; and others were brightly and distinctly marked in the falls with a variety of tints, from a clear pale blue to deep shades of purple and crimson. The tendency to changeability of colouring which is so characteristic of the genus *Iris* is remarkably well exemplified in the varieties of *germanica*, and few who are only acquainted with the common purple form of town gardens would think it possible to obtain such striking departures from the type. In any case no collection can be complete without the German Irises, and they are not only highly attractive but among the easiest to grow, an important point where the situation or soil is unfavourable to the more tender kinds. Having thus eulogised this beautiful section I must return to the systematic description of the species, and will again refer to the best *germanica* varieties in their order.

The great section or sub-genus Apogon includes the Beardless Irises, of which more than thirty species are known, or about one-third of the entire number in the genus. Many of these are, however, either at present confined to collections in botanic gardens or have yet to be introduced. It may readily be imagined that among such a number there must be a great diversity of forms and colours, which is actually the case; but although there are some of these in cultivation that are not very attractive, the majority well supports the credit of the *Iris* family in point of beauty. The distinguishing marks of the section are the absence of beard or crest from the falls and standards, and the possession of a thick twisting rhizome or rootstock. For convenience of classification these thirty species are arranged under smaller secondary groups, which derive their characters chiefly from the forms of the leaves and minor structural differences in the flowers. Thus there are four groups with linear leaves, and the same number with ensiform or sword-shaped leaves. In each of those divisions one of the groups contains stemless or acaulescent species, all the others having stems, but differing chiefly in the relative lengths of the perianth tubes.

Passing the stemless group of Apogons, which contains very few that are known in cultivation, the first species deserving special notice among those with linear leaves is *I. Douglasiana*. This is a pretty form that was discovered by Mr. David Douglas in New California nearly half a century ago, but it has only been introduced to cultivation within the past ten years by Messrs. J. Veitch & Sons of Chelsea. The flowers have lilac-coloured falls marked with purple veins. In another group, which, in addition to the linear leaves, is known by the short dilated perianth tube, is the beautiful form represented in the annexed engraving, *I. tenax*. This, like the preceding, was also discovered by Mr. Douglas in North California, where, and also in New Georgia, it was found commonly growing "in dry soils or open parts of woods, and flowering in April and May." It has also, however, been found in various parts of North America, from Fort Vancouver to Newfoundland. The flowers are very beautiful, the falls being of an extremely rich purple tinge in the centre, lighter on the margin and towards the claw, where the nearly white ground colour is traversed by numerous purple veins. The flowers are usually produced about the present time or a little earlier, and as the plant is perfectly hardy in the south of England it deserves more attention from culturists than it has hitherto received. It is not by any means common, but it can be obtained from most of the nurserymen who specially devote their attention to hardy plants.

This species has besides its beauty another quality to recommend it to notice, for it is one of the very few Irises that possess any economic value. The specific name "*tenax*" refers to this quality—viz., the possession of tough fibres in the leaves. Concerning the uses made of this fibre Mr. Douglas has written as follows:—"The native tribes about Aquilar River in California find this plant very serviceable for many purposes; from the veins of the leaves fine cord is made, which is converted into fishing nets, and from its buoyancy, great strength, and durability it suits this purpose admirably. It is also made into snares for deer and bears; and a good idea may be formed of its strength, when a snare not thicker than a sixteen-thread line is sufficient to strangle

Cervus Alces, the great stag of California, one of the most powerful animals of its tribe. It is also used by the women for making small bags and reticules exactly the same as steel chain purses of fine workmanship." This description of its qualities induced Dr. Lindley to hazard the conjecture that it might be profitably cultivated in this country as a fibre-yielding plant, but the idea has never been carried into execution. Indeed the plants I have seen growing here seemed

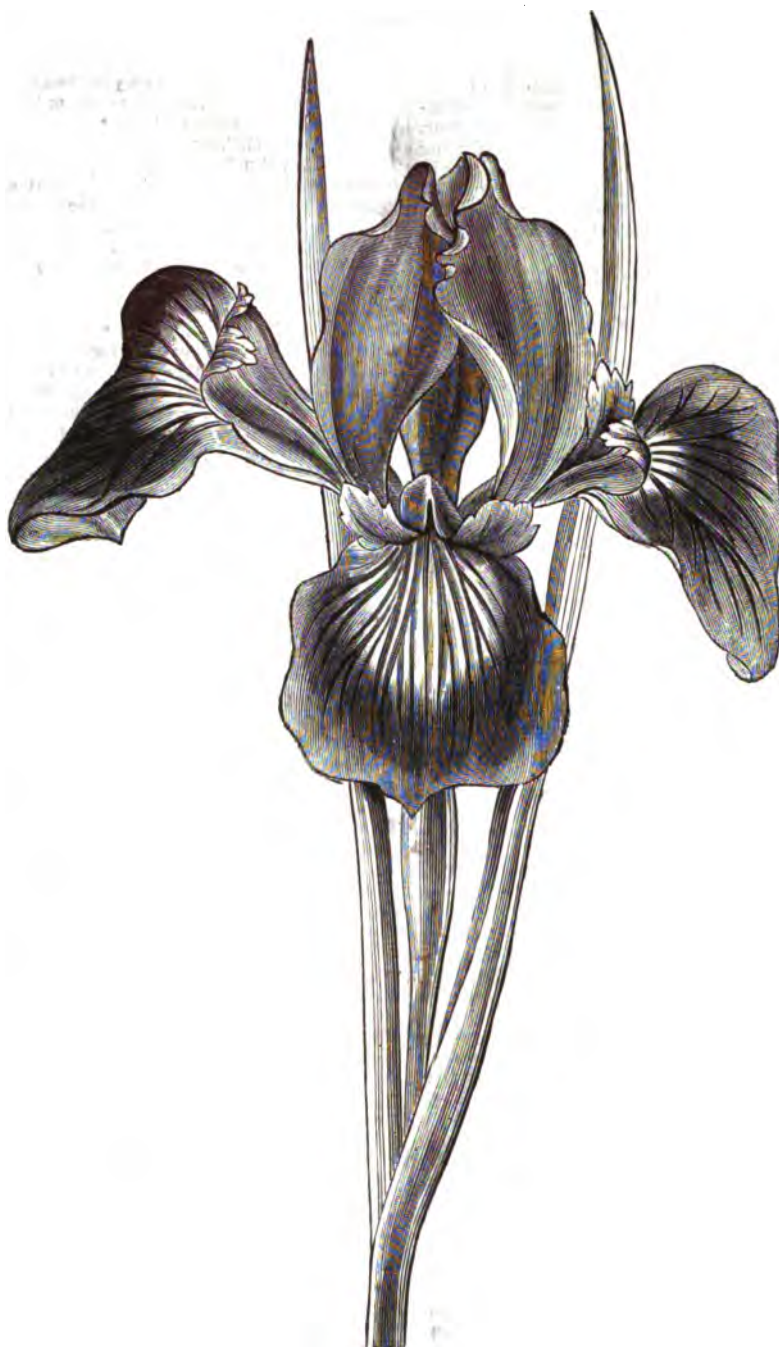


Fig. 69.—IRIS TENAX.

sadly deficient in the quality of toughness, and nearly as brittle as any of the other species.

"WYLD SAVAGE" appears to have been very unfortunate with his Irises judging from the notes on page 438, but I

think his must be an exceptional case, for I know several very large collections of Irises where there have been few losses this year. Perhaps he will tell us at what time of year the plants were placed in the beds, the nature of the soil

and the position of the beds, whether sheltered or otherwise.
—LEWIS CASTLE.

CYMBIDIUM EBURNEUM.

THIS very beautiful and fragrant Orchid, which has hitherto

been comparatively scarce, is now becoming more generally known and appreciated, as it well deserves to be. It has usually, too, been regarded as somewhat difficult of culture, but undoubtedly without sufficient reason. We recently saw a plant in excellent health and flowering freely that had been



Fig. 70.—CYMBIDIUM EBURNEUM.

wintered in a small house with Pelargoniums, and consequently subjected to a much lower temperature than it is thought to require. If a reputedly delicate Orchid can be successfully grown under such conditions there can be no absolute need for

assigning it a warm position in the East India house. Indeed it is quite possible that the non-success of many growers with this Cymbidium may be traced to their having attempted to grow it in a too high temperature.

The engraving (for which we are indebted to Mr. W. Bull) admirably represents the character of the plant. The flowers are of good size, ivory white in colour, and possessing a most agreeable fragrance. They are produced in early spring and continue in good condition for a great length of time. Like other allied species *Cymbidium eburneum* can be grown in pots of moderate size, and requires a soil of lumpy peat with good drainage and abundance of water when growing. It may be increased by dividing the pseudobulbs.

AMERICAN ROSES.

"A BRITISH ROSARIAN" desiring information relative to American Roses, we publish the following excellent monograph, which will be interesting to others beside our correspondent.

A monograph of Roses which are of American origin has I believe, never before been attempted; not, perhaps, because there has been a want of interest in the subject, but because of the inherent difficulty in procuring reliable data. Two classes have had their origin in America, the Prairie and Noisette Roses. These two classes give the most valuable climbers which we have, though our brethren in England do not take very kindly to the former. Besides these two classes many varieties in other groups have had their origin in America, several of which are leading sorts in all Rose catalogues of prominence, but our chief contributions must be considered the Prairie and Noisette varieties, as introducing new and very important groups.

THE PRAIRIE ROSE (*Rosa rubifolia*) is indigenous to America. Seeds of this were sown about 1836 by Messrs. Samuel and John Feast of Baltimore. The seedlings from this sowing were then fertilised by some of the best Roses grown at the time, and from this lot came Baltimore Belle and Queen of Prairies. The Messrs. Feast, together with Joshua Pierce of Washington, have raised nearly all the varieties of this class possessing any merit. Though inferior in quality to the Tea-Noisettes, their hardiness and vigorous habits make them of great value when the more beautiful Noisettes are too tender to be made useful. As an indication of their popularity we may state that, next to the Remontant Roses, more plants are annually sold of the Prairie than of any other class. Baltimore Belle when in blossom gives a display of which anyone may be proud, whether the flowers are viewed individually or in the mass. It is much to be regretted that no further development of this really valuable class has been made. There is no reason why we should not succeed in obtaining a new class of hardy climbers which shall in a great measure combine the good qualities of the Hybrid Perpetual, Noisette, and Prairie Roses. By patient study and care this may be done; who is there that will do it? To accomplish this desired result the Prairie varieties might be made the seed parents, and fertilised by different varieties of Remontant and Noisette Roses known to be good seed-bearers, and that are otherwise desirable.

In the list of American Roses there are several varieties with which I am unacquainted, and the descriptions, therefore, are those of the raisers; or, where in a few instances it was not possible to obtain these, they are described by reliable persons acquainted with the varieties. Whenever possible both the name of the raiser and the year when the variety was first sent out are given.

Prairie Roses possess great vigour of growth, bloom late in the season in large clusters, and though the individual flowers lack many of the desirable features found in other classes, none are more effective in the mass. The following are the leading varieties:—Anna Maria (raised by Samuel Feast of Baltimore, Md., 1843), colour bluish or pale pink, full flowers; has very few thorns. Anna Eliza (Williams), dark purplish red. Baltimore Belle (Samuel J. Feast, 1843).—White, with bluish centre; of good full form. This seems to have some Noisette blood, which makes it a little tender in very severe winters; it is, however, the most beautiful and sought after of the class. Eva Corinne, pale bluish. Gem of the Prairies (raised by Adolphus Burgess, of East New York, 1865).—A hybrid between Queen of the Prairies and Mme. Laffay (Remontant). Rosy crimson, occasionally blotched with white. Jane, rosy bluish, double and finely shaped. King of the Prairies (Samuel Feast, 1843), pale rose. Gracilis (W. Prince, 1845), rose, varying in hue. Linnean Hill Beauty, white or pale bluish. Madame Caradori Allan (S. Feast, 1848), bright pink; semi-double. Milledgeville, pale bluish, tinged with flesh. Miss Gunnell, pale pink. Mrs. Hovey (Joshua Pierce, of Washington).—Pale bluish flowers, becoming almost white; resembles Baltimore Belle, but of

rather hardier habit. Mrs. Pierce (J. Pierce, 1850), bluish. Pallida (S. Feast, 1843), bluish, much resembling Superba. Perpetual Pink (S. Feast, 1843), rosy purple. Pride of Washington, deep rose; small flowers, but distinct and double. Queen of the Prairies (S. Feast, 1843).—Bright rosy red, frequently with white stripe; foliage large and quite deeply serrated. Ranunculiflora, small, bluish flowers. Superba (S. Feast, 1843), pale rose, changing to bluish; and Triumphant (J. Pierce, 1850), deep rose, double and compact. There have been a few other varieties in commerce, but the above constitute those which have most commonly been grown, and are the only ones now propagated. The most valuable are Anna Maria, Baltimore Belle, Gem of Prairies, Mrs. Hovey, Queen of Prairies, and Triumphant.

NOISETTE ROSES, OR CHAMPNEY ROSES (*Rosa Noisettiana*, or *Rosa Champneyana*, or *Rosa Moschata Hybrida*).—The Noisette Rose is a product of America, and obtains its name from Philippe Noisette, a florist of Charleston, South Carolina.

John Champney of Charleston, from the seed of the White Musk Rose fertilised by the Blush China, raised a variety which was called Champney's Pink Cluster. A few years after this, Philippe Noisette, from the seed of Champney's Pink Cluster, raised the Blush Noisette, and this he sent to his brother, Louis Noisette of Paris, under the name of Noisette Rose. The true name, therefore, for this class should be the Champney, but the change cannot now be made.

This group is naturally of vigorous growth, nearly hardy, and produces large clusters of flowers; but, through hybridisation with the Tea section, the original characteristics have in part disappeared. The varieties now generally grown are less hardy and have nearly lost the clustering tendency; but the flowers have much more substance, and are far more beautiful. America (Professor C. G. Page of Washington, D.C.; sent out by Thomas G. Ward, 1859).—Growth vigorous; flowers large, creamy yellow, with a salmon tinge; a cross from Solfaterre and Safrano. Beauty of Greenmount (James Pentland of Baltimore, 1854), rosy red. Champney's Pink Cluster (John Champney).—Very vigorous; flowers pink, semi-double. Cinderella (C. G. Page, 1859), rosy crimson. Dr. Kane (Pentland, 1856).—Growth free; flowers large, sulphur yellow; a shy bloomer on young plants; in the south it is highly esteemed. Isabella Gray (Andrew Gray of Charleston, South Carolina, 1854).—Growth free; flowers large, golden yellow, full and fragrant; on young plants it does not flower fully, and often opens badly; a seedling from Cloth of Gold. Nasaliana (A. Cook, 1872).—Of vigorous growth; flowers pink, of flat form, very fragrant; a seedling from Desprez. Tusenelta (Anthony Cook of Baltimore, 1860).—Pale yellow; a seedling from Solfaterre. Woodland Marguerite (J. Pentland, 1859).—Growth vigorous; flowers pure white, freely produced.

There have been other American varieties of this class, but I am only certain of those above named. We hope our southern rosarians will introduce some new types and colours of Noisettes; almost the only ones of value we now have are shades of yellow and white. In the south many Noisettes seed freely, and great improvements might easily be made by resorting to manual fecundation. I see nothing to prevent the obtaining of the same shades among the Noisettes that we have among the Hybrid Perpetuals.

BOURBON ROSES (*Rosa bourboniana*).—Charles Getz (A. Cook, 1871).—A hybrid; growth very vigorous, making a good climber; quite hardy, colour deep pink; very fragrant. George Peabody (J. Pentland, 1857).—Growth moderate; colour purplish crimson. A probable seedling from Paul Joseph. Oplitz (A. Cook, 1871).—A hybrid. Growth moderate; colour fiery red. A seedling from Gloire des Rosamènes. Renno (A. Cook, 1868).—Named after General Renno of Philadelphia. Colour deep pink. Setina (Peter Henderson, 1859).—Identical with Hermosa, from which it is a sport, except that it is of stronger growth.

BENGAL ROSE (*Rosa indica*).—James Sprunt (Rev. James M. Sprunt, 1856).—Sent out by Peter Henderson, 1870. Like Cramoisie-Superieur, but of vigorous growth, making an excellent climbing sort.

HYBRID PERPETUAL ROSES (*Rosa damascena hybrida*).—Belle Americaine (Daniel Boll of New York).—Deep pink colour; flowers small, but of fine form. Madame Boll (Daniel Boll).—Sent out by Mons. Boyeau of Angers, France, in 1859. Growth vigorous; foliage very large and handsome, of a pale green colour; spines numerous. Flowers large or very large; form flat; colour carmine rose; a free autumnal bloomer and very hardy, perhaps the most hardy in the class. One of the

most superb Roses for the garden. Madame Trudeau (Daniel Boll, 1860).—Deep rose, double and well formed. Charles Cook (A. Cook, 1871).—Scarlet crimson. Contina (A. Cook, 1871).—Rosy pink. Il Defense (A. Cook, 1871).—Shining red, Camellia form, thornless. La Brillante (A. Cook, 1872).—Brilliant red; raised from Napoleon III. Rosalina (A. Cook, 1871).—Rose colour. Souvenir de President Lincoln (A. Cook, 1869).—Dark velvety crimson. These are the only varieties I can name of American origin, though others have been raised. Mr. Boll, now deceased, who was by birth a Swiss, produced a number of seedling Hybrid Perpetuals of merit; several of these were sold to parties in France, who sent them out as their own. Among these was Madame Boll. It would be interesting to know whether any among them besides Madame Boll are now famous.

TEA ROSES (*Rosa indica odorata*).—American Banner (George Cartwright of Dedham, Mass., 1877).—Sent out by Peter Henderson in 1878. A sport from Bon Silene. Growth moderate; foliage quite small and leathery; flowers carmine, striped with white. The form and fragrance of the flowers seem the same as in the old variety, but in habit they are entirely distinct. It will perhaps be popular as a novelty, but it has no intrinsic merit to make it valuable, and we cannot commend it. Caroline Cook (Anthony Cook, 1871).—Colour pink. A seedling from Safrano. Cornelia Cook (A. Cook, 1855).—Growth moderate; flowers white tinged with flesh, large and very full; not a free bloomer, and often does not open well, but a superb Rose when well grown. A seedling from Devonensis. Desantres (A. Cook, 1855).—Colour flesh, very distinct from any other Tea Rose; a better bloomer than Cornelia Cook, and a good winter flower. Raised from Devonensis. General Washington (C. G. Page, 1860), rosy crimson. Isabella Sprunt (Rev. James M. Sprunt, 1855).—Sent out by Isaac Buchanan of New York in 1865. Sulphur yellow; a sport from Safrano, which variety it very closely resembles in all save colour of the flower. Paradine (A. Cook, 1858).—Canary yellow, small flowers. A seedling from Le Pactole. President (sent out by Mr. W. Paul of London in 1860).—Growth moderate; colour rose with salmon shade; flowers large, moderately full, much resembling Adam. Mr. Paul, the disseminator, states that this is an American variety, but I am unable to learn by whom it was originated. Among the many letters I received in response to inquiries is one from the Rev. James M. Sprunt, D.D., relative to the origin of the Roses James and Isabella Sprunt, and is of such interest that I insert it. "In the spring of 1855 I removed from my former residence in this town to the premises on which I now reside. Among the plants which I carried with me was a very large and handsome Safrano Rose. It had been trained to a single stem fully 2 inches in diameter, and forming a symmetrical head about 4 feet from the ground. I pruned it well back, but the early summer being dry the top died. The plant, however, put forth six or eight strong shoots from the collar at the surface of the soil, and one of these attracted my attention from its dissimilarity to the others in the colour of the stem and foliage. I observed it carefully until it bloomed, when it proved to be a fine yellow, all the other shoots retaining the normal colour of the Safrano. From this sport, which was named 'Isabella Sprunt,' from one of my daughters, I sent cutting to Mr. Isaac Buchanan, florist of New York, in 1860, and it was sent out by him some two or three years afterwards. I think before the close of the war, though I heard nothing concerning it till 1865. (By referring to old files of the *Country Gentleman* we find Mr. Buchanan first offered this for sale in 1865). In the winter of 1856 I took up the old plant and sawed the stock into five or six pieces, being careful to get a good share of the root to the yellow shoot; that plant still lives and is quite constant, though it has had perhaps two or three Safrano flowers, certainly one, and besides, about two years ago there was a fully developed bud and flower, exactly one half of which was like Safrano, and the other half like Isabella Sprunt. I tried to fix this new sport, but it produced afterwards only yellow flowers. About the same time (1855) I divided some strong plants of Agrippina and planted them at my new home. Two or three years later I observed a single shoot from one of these plants growing vigorously without flowers or branches, and as I observed it from time to time, it continued until it measured over 15 feet before it showed any buds, the rest of the plant retaining its normal characteristics. This shoot branched out very freely the following year, and cuttings retained the same habit invariably. I came to the conclusion that this was not a sport but a chance seedling, as

the flowers were so very unlike the parent, and the roots were so matted together that I could not determine whether it proceeded from the old root or not without taking up the whole plant, which I was unwilling to do. But the wonderful thing is, that after the rest of the plant had for years retained its original habit and flowers, gradually it began to change, until the whole is now like the James Sprunt in growth and flower, and no part of the Agrippina remains. I have written you this statement that you may judge for yourself, my own opinion having changed more than once."

Safrano is, therefore, without doubt a sport resulting from one of these strange freaks in which Nature occasionally indulges. About James Sprunt there is less certainty, but I consider it also to be a sport; it is like Agrippina, only with more substance of flower and greater vigour of growth. The theory of evolution would point towards this as an example of how Nature tends towards progression and improvement as well as towards variation.

In the production of new Roses, instead of having exhausted the field, as a few writers have incautiously observed, we have only just entered it; the future possibilities open to the raiser of new Roses is only dawning upon us. Lyons, France, is the head centre from whence most of our cherished Roses have come. Mons. Jean Sisley, an eminent horticultural authority, says that none of their rosarians practise artificial fertilisation; they simply gather and sow the seed as they would sow a field with Carrots, and for the most part not even keeping the varieties separate. Nature unaided is left to do all, and everything is left to chance.

By adopting the same practice we might just as well produce many varieties of value, and I hope there will be found among us many to thus take their chance in the production of new sorts. But why leave it all to chance?—H. B. ELLWANGER.
(—Read before the W.N.Y. Horticultural Society, Rochester.)

RHODODENDRONS.

HARDEST of evergreens and grandest of flowering shrubs, Rhododendrons should be grown in all gardens where the soil is suitable, and this is nearly everywhere except on the limestone formation and where the subsoil is very dry. A light sandy vegetable soil is the best, but the shrubs grow freely in some clays and strong marls. No shrubs can be transplanted more easily than these, and few grow better under the shade of trees, as may be seen by the grand masses of them at Cobham Hall, Deepdene, and many other places that could be mentioned; but the best varieties are worthy of better positions, and should have prominent places in pleasure grounds and shrubberies. Now that the shrubs are flowering is the very best time for making selections; and as I have lately had the privilege of inspecting Mr. McIntosh's fine collection at Duncreevan and noting some of the best varieties for my own satisfaction, my notes may probably be useful to others, and I submit them just as they were written in the garden. All the varieties mentioned are unquestionably good, and no one can err by including them in their collections.

Mrs. Russell Sturges, like a *Pelargonium*, blush, dark blotch; the best of its class. Lady Claremont, crimson, dark blotch; a splendid variety. Cardinal, a comparatively new and very rich flower, the colour being suggested by the name. Mrs. Fitzgerald, crimson, very bright and glowing; excellent. Mrs. Holford, salmon, grand trusses; the finest of its colour. Michael Waterer, magnificent in colour and truss; should be in every collection, as also should its rich, free, and fine kinsmen Frederick and John Waterer. Adrian (new), fine truss, rose, dark centre; very effective. Annie Dixwell (also new), rose and crimson; free and very good. Meteor, rich fiery crimson; a fine, new, brilliant variety. Lord Selborne, salmon-crimson, highly attractive. Madame Cavallo, Pictum, Papilionaceum, and Mrs. John Clutton are blush or nearly white varieties with amber blotches more or less prominent, and are indispensable for associating with darker forms. Purity, almost pure white, and The Queen are also of unquestionable merit, and very beautiful. Sigismund Rucker (new), magenta and rich crimson; a splendid variety. Mrs. William Agnew, magnificent truss, rose and amber; one of the finest in the garden. Lady Armstrong, rich rose; an excellent variety. Cyaneum, purplish mauve; bright and telling. Gloriosum, blush pink, remarkably fine trusses; very imposing. Mrs. J. Shuttlesworth, nearly scarlet with white anthers; free and very good. Victuam, rosy scarlet, free and bright; and similarly free is the scarlet variety Decorator. Raphael, rosy crimson with dense dark

spots; a remarkably fine variety. Mrs. Heywood, silvery lilac and amber; large truss, and effective. James McIntosh, grand flower and fine truss, rosy crimson; one of the best of its class. Neilsoni, bright crimson, good truss; free and fine. Lady Southampton (new), rose-tinted; a charming variety of great merit. William Gladstone, smooth deep rose; good. Mrs. Thomas Longman, purplish-crimson, yellowish spot; very striking. Louisa Countess of Ashburton, salmon-rose; very beautiful. Kate Waterer, rose, yellow blotch, fine flower and truss; one of the best. Agamemnon, very rich lake with white blotch; dark and distinct. Minnie, blush pink with chocolate blotch; an attractive variety. Purpleum elegans and Album elegans are fine and telling varieties. Alexander Dancer, rosy crimson; very large truss. Old Port, a very dark and fine variety. Atrosanguineum, one of the hardiest of the rich crimsons. This variety was taken by Mr. Hovey to America for hybridising purposes. Mrs. Thomas Wain, rosy purple, white stamens; neat and good. Dhuleep Singh, chocolate-crimson, deep and rich; a magnificent variety. Baroness Lionel de Rothschild, salmon-rose; very lovely. King of Purples, distinct and telling. Iron Duke (new), rich crimson-scarlet. Mrs. F. Hankey (also comparatively new), rose, dark blotch; fine. Nero, purplish-crimson, grand truss and fine colour; and Standish's Perfection, a superior white variety and highly attractive.

I may add that I had read of Mr. McIntosh's garden being both enjoyable and instructive, and I found it so, while nothing could exceed the courtesy of the owner whose knowledge of the plants, shrubs, and trees in his possession is of great value to visitors seeking information. Most interesting, too, is it to notice the confidence existing between Mr. McIntosh and his feathered friends—even the timid chaffinches follow him "all over the place" begging for the crumbs of biscuit that he scatters at his feet; while the ducks and chickens if they see him afar off race with each other for the sweetest morsels, and they never run in vain. The Rhododendrons are fading now, but my visit will not soon fade from my memory.—A GARDENER.

CONIFERÆ IN PENRHYN PARK.

THE following are the measurements of several trees growing inside the park here, and which I consider worthy of notice, as some of the specimens, though growing at a high elevation and exposed to the rough winds blowing in from the Irish Sea, are perhaps the best of their kind in England.

Taxodium sempervirens.—Height, 53 feet; girth of stem at 3 feet from the ground 9 feet, and at 5 feet up, 8 feet; diameter of spread of branches, 28 feet. This tree is growing on the sloping ground between the carriage drive and river Ogwen, and about half way between Penrhyn Castle and the model village of Llandegai. It is a beautiful specimen, richly clothed with foliage of a brownish green colour, but unfortunately during a severe storm its leader was broken over, which is, however, being rapidly replaced by another side shoot. Trees of this species succeed admirably here, several others being little inferior to the one described.

Wellingtonia gigantea, growing close to the carriage drive, and nearer Llandegai than the former, measures as follows:—Height, 50 feet; girth of stem at 3 feet from the ground, 7 feet 9 inches; diameter of spread of branches, 19 feet. All the trees of this kind are in a very healthy and thriving condition, and seem well adapted for their high and breezy situation.

Picea Pinetum, growing a few yards from the latter, has attained the following dimensions:—Height, 60 feet; girth of stem at 3 feet from the ground, 4 feet 4 inches; diameter of spread of branches, 22 feet. This is a magnificent tree, about which there has been a great diversity of opinion, some eminent nurserymen declaring it to be *P. Nordmanniana*, while others affirm it to be *P. Pinetum*; indeed it requires a very careful inspection, as the difference is scarcely perceptible.

Abies Douglasii, growing on the opposite side of the carriage drive from the trees already described, is 76 feet high; girth of stem at 3 feet from the ground, 11 feet, and at 5 feet, 9 feet 4 inches, with a diameter of spread of branches of 51 feet. Adjoining this tree are two others of the same kind and of nearly similar dimensions. All three have, however, suffered severely from the effects of their exposed situation, their leaders having been repeatedly broken over by the wind; and it is a striking fact that nearly all the Douglas Firs here on overtopping the surrounding trees become table-headed from the repeated loss of leaders.

Picea Webbiana.—Height, 53 feet; girth of stem at 3 feet from

the ground, 4 feet 4 inches; diameter of spread of branches, 20 feet. This tree is not in a very thriving condition and but thinly clad with foliage, which may partly be accounted for by its growing in a damp situation close to the Ogwen River.

Picea grandis.—Height, 63 feet; girth of stem at 3 feet from the ground, 5 feet 4 inches; diameter of spread of branches, 27 feet. This is a handsome specimen, growing a short distance from the last-mentioned tree, but in drier soil, and is worthy of a better position, being entirely hid from the carriage drive.

Picea nobilis.—The largest tree here of this kind is 51 feet in height; with a girth of stem at 3 feet from the ground of 4 feet 6 inches; and diameter of spread of branches of 24 feet.

Cryptomeria japonica.—Height, 48 feet; girth of stem at 3 feet from the ground, 4 feet 2 inches; diameter of spread of branches, 18 feet. This and the following tree are growing close to the entrance from port Penrhyn.

Cedrus Deodara.—Height, 52 feet; girth of stem at 3 feet from the ground, 4 feet 8 inches; diameter of spread of branches, 23 feet.

Thuja Menziesii.—Trees of this kind grow very rapidly here, several, though of no great age, having already attained the height of 40 feet.

Abies morinda.—Height, 40 feet; girth of stem at 3 feet from the ground, 3 feet 10 inches; diameter of spread of branches 21 feet. This species of Spruce attains great perfection here, and as an ornamental tree its drooping foliage forms a striking contrast when mixed with Conifers of a more stiff and rigid appearance.

On the lawn tennis ground, between the castle and flower garden, are the following trees, the sizes of which fully illustrate the growths made by different trees on the same soil in a given space of time, the height of each when planted being about 6 feet.

Wellingtonia gigantea.—Planted on the 17th October, 1859, by Her Majesty the Queen. Height, 35 feet 2 inches; girth of stem at 3 feet from the ground, 4 feet 11 inches; diameter of spread of branches, 15 feet.

A *Turkey Oak*, planted by Her Majesty on the same date, is now 28 feet 10 inches in height, with a diameter of spread of branches of 18 feet.

English Oak.—Planted by H.R.H. The Duke of Connaught on the 17th October, 1859. Height, 21 feet 6 inches; diameter of spread of branches, 10 feet.

Picea Nordmanniana.—Planted in 1857 by Sir James McGarel Hogg. Height, 43 feet 6 inches; girth of stem at 3 feet from the ground, 3 feet 5 inches; diameter of spread of branches, 15 feet.

Wellingtonia gigantea.—Planted in 1857 by the Lady Hogg. Height, 53 feet; girth of stem at 3 feet from the ground, 6 feet 10 inches; diameter of spread of branches, 15 feet.

Taxodium sempervirens.—Planted in 1857 by the Lady Penrhyn. Height, 42 feet 6 inches; girth of stem at 3 feet from the ground, 5 feet 5 inches; diameter of spread of branches, 15 feet.

Two very fine *Cedrus of Lebanon* adorn the flower garden, the height of each being upwards of 50 feet, with a diameter of spread of branches of 60 feet. One of these noble trees has from time to time, by severe gales, been denuded of many of its largest branches, leaving one side almost bare, and giving the tree an old and hoary appearance.

An *Araucaria Cunninghamii* growing here, and which is considered the largest specimen in England, is 38 feet in height, with a girth of 3 feet 7 inches at 3 feet from the ground, and diameter of spread of branches of 18 feet.

Abies Menziesii.—Height, 53 feet; girth of stem at 3 feet from the ground, 3 feet 6 inches; diameter of spread of branches, 21 feet. This tree occupies a sheltered position on the north-west side of the castle, being well protected by taller trees.

Growing almost side by side are two trees of the Hemlock Spruce, *Abies canadensis*, the larger measuring 42 feet 9 inches in height, with a girth of stem at 3 feet from the ground of 3 feet 6 inches, and diameter of spread of branches of 21 feet. These trees are elegant in appearance and valuable as growing under the shade and drip of other trees.

Fitzroya patagonica.—Conspicuous amongst the plants in the nursery is a good specimen of this graceful drooping evergreen tree, measuring in height 17 feet, and with a diameter of spread of branches of 9 feet; also a *Photinia glabra*, affirmed by many to be one of the finest shrubs of the kind in Britain.

In conclusion, I may state that the general class of soil on which these trees are growing is sandy loam resting on slate rock.—ANGUS D. WEBSTER (in *Journal of Forestry*).

SIBTHORPIA EUROPEA.—Among plants useful for baskets none excel the beautiful Cornish Moneywort or Sibthorpi

europæa. Its leaves are alternate, roundish, broadly renate—in fact similar to the pretty *Peperomia prostrata* figured in last week's Journal. The beauty of the Cornish Moneywort is in its willingness to grow anywhere, excepting, perhaps, fully exposed to the sun. As a British plant it is very rare, the variegated form being very beautiful.—W. ROBERTS.

WORK FOR THE WEEK.

HARDY FRUIT GARDEN.

THE prolonged easterly winds have resulted in a grievous attack of aphides on bush fruit, and the leaves and shoots of Cherry, Plum, Peach, and Nectarine trees are seriously affected. Dipping the shoots in tobacco water is a tedious but generally an effectual process if it be allowed to remain on a day and the trees are then washed thoroughly with the syringe or engine. Stopping the foreright and side shoots of Plums and Cherries to about three leaves will to a great extent assist in freeing the trees from the insects, the growths required for laying-in or extension being dipped in tobacco water and afterwards syringed as advised above. The Peach and Nectarine may be treated similarly, only the shoots must not be stopped, and as there is a considerable quantity of blistered leaves the worst should be removed, and with finer weather we may hope for better foliage. Pyramidal or bush trees of Apples, Pears, Plums, and Cherries should also be pruned in, the side shoots to three or four leaves, and the terminals to about six, whilst trees in process of formation may be allowed to make 12 inches of growth before stopping. Avoid crowding the trees with too much growth, it being better to rub off superfluous shoots and keep the heads open so as to admit the ripening influence of air and light. Bush fruits such as Gooseberries, Red and White Currants, should be stopped back where the growth is too abundant, the side shoots to within about three joints of their base, and the terminals in proportion to the extension desired. Black Currants must not have the shoots stopped; they with Gooseberries and Currants being infested with aphides may be syringed as advised for fruit trees. The stopping and nailing, tying, or laying-in of wall trees generally should be proceeded with as expeditiously as possible, laying in a sufficiency of well-placed shoots to fill up or extend the trees as necessary, and in pruning Pears any strong forerights should be rubbed off or where they project beyond the spurs be cut back, not stopping the shoots closer than three or four leaves, as when cut back severely they will probably start into strong second growth instead of forming spurs. Reduce the number of suckers of Raspberries to four or six of the strongest, pulling up the others. Strawberries should be netted over to protect the fruit from birds, and should be well watered in dry weather, also Raspberries, especially in light shallow soils, mulching with short manure as a check to evaporation, and to increase the size and continuance of the fruit. It is little use doing this after the fruit is ripening. Where Gooseberry crops are heavy the fruit should be well thinned by gathering for tarts, &c., as allowing too many fruits to remain on varieties grown for dessert impairs the size and quality of the fruit.

Strawberries in Pots for Forcing.—Preparations should be made for layering runners as early as possible. Those planted out early last year will afford strong runners in advance of older plants, and the space between the rows is also greater. Pots 3 inches in diameter are suitable for the layers, placing a row of pots between every alternate row of plants and about half plunged. The runners from two rows of plants will be sufficient for one row of pots, leaving every alternate row vacant for facility of watering the runners after they are layered in the pots. Good turfy rather strong loam with a fifth of old manure and a sprinkling of bone dust form a suitable compost, potsherds are not necessary. A slight indent should be made in the soil in the centre of the pots, the runners being placed there and secured with a peg. Keep the soil moist and they will soon become well rooted, and as soon as that is effected detach them from the parent and remove to a north wall or hedge for a few days, when they may be transferred to large pots. *Vicomtesse Hericart de Thury*, *La Grosse Sucrée*, and *President*, with *Dr. Hogg* for late forcing, are good varieties.

FRUIT HOUSES.

Vines.—Early Vines which have been cleared of ripe fruit must be copiously syringed, and if red spider have obtained a hold on the foliage apply an insecticide, which the foliage will now bear without injury. If the foliage has suffered from red spider or other cause, allow a moderate extension of the laterals. The inside borders should be kept moist. When Muscats are stoning admit air freely as a preventive of scalding, similar remarks applying to *Lady Downe's* undergoing that process. Finish the thinning of late Grapes as soon as possible, mulching the inside borders and affording thorough supplies of water about once a week. Raised outside borders will also require mulching and abundance of water in dry weather, as when the surface becomes dry the roots descend in quest of moisture, which is certain to result in shanking, especially in a wet season. With an insuffi-

ciency of water, though the roots be near the surface, the swelling of the Grapes will be impeded to the detriment of the present crop and ripening the foliage prematurely. Cold nights will still necessitate the maintenance of fires, the temperature not being allowed to fall below 60° to 65° or 70° to 75° by day. The fires, however, should be extinguished early on fine mornings, when ventilation must have attention, increasing it as the sun gains power. When a temperature of 80° or 85° has been reached the front ventilators may be opened, but not to lower the temperature below the degrees indicated above, as sudden depressions and cold draughts are productive of rust. Close the house early and by or before 80° is reached in the declining temperature. Newly planted Vines having taken freely to the fresh soil should be encouraged to make growth by closing the house early, syringing copiously on fine afternoons, encouraging the roots by mulching, and watering copiously.

Cherry House.—Red spider will have increased owing to the discontinuance of syringing whilst the fruit is ripening and for preserving it in good condition; but as soon as the Cherries are gathered syringe twice a day. Open the house fully, and when the buds are becoming prominent remove the roof lights. Black aphides must be kept under by fumigation. Cease syringing Plum trees when the fruit commences colouring, and supply weak liquid manure to the roots whenever it is required.

Melons.—Seed may still be sown, but for dung-heated frames and pits the last sowing should be made at once, and under ordinary conditions the plants produced will afford a supply of ripe fruit towards the close of September. Those, however, who have light well-heated houses may continue sowing up to the end of July. The later plants will continue the supply of fruit up to November, after which Melons are of indifferent quality. A good bottom heat should be secured to young plants, which will not only encourage their speedy establishment, but will lessen the necessity for fire heat, that will only now be required to prevent the temperature falling below 65° at night and 70° to 75° by day. Keep the laterals closely stopped where the fruit is swelling, and if they crowd the principal leaves thin them well out, affording the needful support to the fruit. Cut the fruits when they are fairly ripe, not allowing them to become so ripe as to part from the footstalk; and on the other hand, if cut too soon the fruit will shrivel and be poor in flavour. Fruits that must be cut from exhausted plants to make room for successional plants should be removed with a foot or more of stem attached, and be ripened on a shelf. Fertilise all pistillate flowers every day in a dry atmosphere, and when three or four fruit per plant are set and swelling remove all the other flowers as well as any surplus fruits, giving the plants a good supply of weak liquid manure, and cover the roots with earth. Close pits and frames early, so as to secure a good heat for the maintenance of the temperature during the night. In bright weather shade for an hour or two in the hottest part of the day will be an advantage, but it should only be given to prevent scorching.

PLANT HOUSES.

Greenhouse.—Fuchsias that commenced flowering early should now be regularly supplied with weak liquid manure, and syringed overhead daily to keep down insects. Plants flowering very early are liable to become shabby in appearance and are not satisfactory. Such should be placed out of doors for a month in a sheltered situation, the flowers and seedpods being picked off and the wood cut back about a third; and after the buds have started the plants can be shifted into pots 2 or 3 inches larger, employing good rich soil. If then taken indoors they will flower again through the autumn and be very useful. Plants required to bloom about the end of August or early in September will, if plunged outdoors in a sheltered place, make sturdy compact growth and flower more profusely than those kept indoors. Place them under glass about a month before they are required in flower, attending well with water, and syringing overhead. Spring-struck cuttings of these plants for late display should be shifted-on as they require more root room, syringing and shading from hot sun so as to promote free growth, removing the blooms as they show, and feeding with liquid manure. To ensure *Kalceanthus* flowering well the following year they should be placed outdoors and be well supplied with water. Young plants of *Adenandras*, *Boronia*, *Chorozemas*, *Eriostemons*, *Hedera*, *Polygalas*, *Pimeleas*, *Leschenaultias*, *Pleromas*, and others that are free-rooting require removal into larger pots, as advised in spring. They require good fibrous peat with a small admixture of sand. The soil should be in a moderately moist condition, and the ball of the plants should also be moist. Keep up plenty of moisture in the house, which will promote the speedy establishment of the plants. Slight shade in bright weather should be afforded until the roots begin to take hold of the fresh soil. *Dracophyllum gracile*, *Gompholobium*, and *Hovea Celsi* that make but few roots will not require shifting at this season unless very strong. Half-specimen hardwood plants that require additional root room should receive a shift, and be shaded with some light material for two or three weeks. Let all young plants be regularly tied as they make growth, keeping the strongest well tied out and down to the rim of the pot. *Pimeleas*, *Chorozemas*, *Eriostemons*, *Polygalas*, and similar

plants should be syringed overhead during the summer season, in order to promote growth and keep them free from insects. Encourage the growth of Azaleas that flowered early, and where potted some weeks ago they should have the shading reduced, or only afforded in very bright weather. Afford liquid manure to weak plants at every alternate watering. Remove the seedpods from late-flowered plants, and encourage them to make all the growth possible by keeping the house rather close and moist and shading from the direct rays of the sun. Acacias, Bouvardias, Correas, Cytisuses, Linums, Monochsetums, &c., for winter flowering should have every encouragement to make a free growth, and any that require more root room should be afforded it at once, so as to fill the pots with roots before they are placed outdoors to harden the growth. Epacris that are making free growth should have plenty of light, admitting air early, and syringing the plants moderately overhead.

TO CORRESPONDENTS.

* * All correspondence should be directed either to "The Editors" or to "The Publisher." Letters addressed to Mr. Johnson or Dr. Hogg often remain unopened unavoidably. We request that no one will write privately to any of our correspondents, as doing so subjects them to unjustifiable trouble and expense. Correspondents should not mix up on the same sheet questions relating to Gardening and those on Poultry and Bee subjects, and should never send more than two or three questions at once. All articles intended for insertion should be written on one side of the paper only. We cannot reply to questions through the post, and we do not undertake to return rejected communications.

GAULTHERIA SHALLON (E. F. B.).—It is propagated by layers, and plants can be obtained from those nurserymen who grow large collections of evergreens. It is of very easy culture, and grows well under trees.

SOIL UNSATISFACTORY (West Suffolk).—If you will send us a sample of the soil and green matter you describe, and state also the position of your garden, whether it is low or shaded with trees, we will endeavour to answer your letter, which we are unable to do now in a satisfactory manner.

ZONAL PELARGONIUMS NOT FLOWERING (White Rose).—If your soil is not rich make it very firm when planting, pressing it quite hard round the roots with a blunted stick; the growths will then be more short-jointed and flowers more plentiful. If this plan fails plunge the plants, quite covering the pots, and you will have abundance of flowers if you grow good bedding varieties.

SEEDLING AURICULAS (Flora).—The plants you have recently potted should be planted in a frame facing the north, and during hot weather it will be advantageous if the frame can be placed on the north side of a wall or building. Water the plants carefully, ventilate sufficiently, and keep them free from insects, slugs, and caterpillars. The plants can be wintered safely in the frame, which should be removed to a more sunny position during September.

BATH ASPARAGUS (Idem).—The bundles to which you refer as sold in the shops at Bath and eaten like Asparagus are flower heads of *Ornithogalum pyrenaicum*, a British plant that grows in meadows in certain parts of the country.

GRAPES SCALDED (Old Subscriber).—If you keep the Vines well supplied with water at the roots and maintain a night temperature of 65° for the Muscats, with the top lights opened about half an inch, and increase the ventilation very early in the morning (immediately the sun raises the temperature of the house), the Grapes will swell to maturity. Scalding is caused by permitting the temperature of the house to become too high before the ventilators are opened and then admitting a large volume of air at once to reduce the heat. The heat of vineries should never be reduced by ventilation, but the temperature should be prevented rising so as to render any reduction of heat unnecessary.

GRAPES SCALDED (P. S.).—The berries sent are seriously injured, and if the majority on the Vines are in a similar state the crop will be spoiled. Raise the night temperature of the house 5°, and in other respects follow the advice given to "OLD SUBSCRIBER." Early ventilation is most important in the management of vineries, and we have often found that scorching and scalding occur on Sunday mornings, when the attendants sometimes indulge in rest for an hour or two longer than usual.

SCALE ON CAMELLIAS (C. B.).—The woolly matter on the Camellia leaves is the protective covering of young scale, of which great numbers are visible through a powerful lens. The most satisfactory mode of eradicating the pest is to sponge the leaves carefully with a strong solution of soft soap, Gishurst compound, or other approved insecticide. Syringing the shrubs with paraffin water, an ounce of the oil dissolved in a gallon of soapy water, has been found beneficial by some cultivators.

DESTROYING CATERPILLARS (E. Cook).—You will find an excellent mode of destroying the Gooseberry caterpillar detailed on page 454 of our issue of last week. Mr. Witherspoon informs us that when the weather is calm and the bushes damp he dusts them with hellebore powder through a piece of muslin, and next morning all the caterpillars that have been touched with the powder are found dead. This simple and effective plan is also successfully adopted by other cultivators in ridding their bushes from the injurious pest.

MELONS DAMPING (W. N.).—The plants require more heat and ventilation. The temperature of the frame should not be much below 70° in the morning when the glass is uncovered, the lights being raised from a quarter to half an inch at the back all night according to the weather. If the wind is keen the aperture for ventilation should be sheltered with a board fixed on edge an inch or two from the back of the frame. The *Aquilegias* you have sent are seedling forms of *A. vulgaris*, some of which are very pretty. They have no resemblance whatever to *A. Skinneri*, which is scarlet and yellow with long spurs.

ABNORMAL CALCOLARIAS (W. S.).—The circumstance of two flowers being produced from one peduncle is not unusual, neither is it very common.

We have occasionally had plants that produced flowers similar to those enclosed, but as they were generally small and deficient in form like those before us we did not attempt to increase the varieties by propagation. We do not advise you to save seed from your plant, as in all probability such seed would produce plants yielding flowers of inferior quality. You may readily strike cuttings or obtain rooted offsets if you wish to attempt to "fix" the peculiarity of your variety.

PEACH TREE UNHEALTHY (E. H. N.).—The leaves and also the fruit appear to have been punctured by an insect of some kind. A decoction of quassia, nicotine soap, and other approved insecticides that have been frequently mentioned either destroy, check, or prevent the attacks of insects. There are also signs of mildew on the fruit, the remedy for which is dusting the affected parts with sulphur. The root-action of the tree is also probably defective. If in a pot, remove the tree from the house, cleanse it thoroughly, and give fresh soil. If planted out, remove most of the fruit and also some of the old soil from the roots, and add fresh compost to induce freer root-action and restore the lost vigour of the tree.

MARKET GARDENING (T. I. N.).—No one can safely invest his capital in this business without having some practical knowledge of growing produce for market. Instead of attempting to answer your questions we shall give you advice of far more value. Obtain an appointment for a year in a large market garden and study closely the modes of cropping, culture, and all the details of management in the transaction of the business. You will then be in a position to enter with confidence on such an undertaking as you suggest, and you will find your year of actual practice of more value to you than any advice that can be given through the columns of a periodical or by reading all the books on gardening that are published; indeed, there are no books that will give you the precise information you seek.

PINE APPLES NOT FRUITING (Twelve-years Subscriber).—The plants were shifted too late, and your only mode of inducing them to fruit now is to give them a rather severe check. Give them no water for three weeks and little or no fire heat, at the same time ventilating abundantly. We have known the lights of a Pine pit opened wide night and day during the last three weeks of June, no fire heat whatever being employed. After that decided check the plants were plunged in a bottom heat of 80°, and the usual temperature being resumed, nearly all of them "threw up" and gave a valuable supply of medium-sized fruit.

REEDING FOR SUCCESSION (A Young Gardener).—Towards the middle of June the first main crop may be sown, another in the course of July, and lastly early in August; and in this month the main plantation is made. Sow in drills 12 inches apart and about a quarter of an inch below the surface. When an inch in height thin the plants to 3 or 4 inches apart; those taken away are too small to be of any service if pricked out. Water should be given freely in dry weather. When the larger seedlings have been transplanted the smaller ones which remain should have a gentle watering, and in twelve or fourteen days they will afford a second successional crop; and, by a repetition of this management, in general, a third. The plants are generally fit for transplanting when of a month's growth in the seed bed, or when 5 or 6 inches high. Set them in rows 12 or 16 inches apart each way; the Batavian requires the greatest space. Water must be given moderately every evening until the plants are established, after which only in excessive and protracted drought. Those which are left in the seed bed in general attain a finer growth than those that have been moved. In November some plants that have attained nearly their full size may be removed to the south side of a sloping bank of dry light earth raised 1 or 2 feet behind, to be protected by frames, mats, or thick coverings of litter during severe and very wet weather, but to be carefully uncovered during mild dry days. The plants in this instance are not required to be further apart than 6 or 8 inches. This plan may be followed in open days during December and January, by which means a constant supply may be obtained. For modes of blanching see our "Kitchen Garden Manual," price 4½d., post free.

RAISING FERNS FROM SPORES (Yorkshire).—If the spores you have received still retain any life after their long voyage, which is exceedingly problematical, you may possibly succeed in raising young plants by adopting the following system of treatment. Obtain some ordinary light garden soil, and bake it to destroy any vegetable or animal substance; it may contain that would give rise to a fungoid growth. Pans or shallow pots should be three-parts filled with potsherds, placing the largest pieces at the bottom and over them the small pieces. Next a layer of moss should be placed on the drainage, and then fill up with the baked soil, which must be finely sifted. Render the surface even and moderately firm, giving sufficient water to thoroughly moisten the soil, allowing it to partially drain before sowing the spores. Place the pot or pan in a deep saucer, which must be kept filled with water, and on the top of the pot put a flat piece of glass to prevent evaporation after the spores are sown. A stove temperature and a shady position will be required for such Ferns as you mention. As soon as the green leaf-like expansions or prothallia are large enough carefully lift them, and place them in larger pans of similar soil, so that they have more space to grow. When the young fronds appear the plants may be transferred singly to small pots. The spores of some species of Ferns are many months in forming the prothallia, while others are produced in a few weeks. You must wait at least a year before giving up hope, and the surface of the soil must not once become dry during that period.

NEW ZEALAND FLAX (Idem).—*Phormium tenax* is well worth growing as a decorative plant for the greenhouse or conservatory, but the variegated form is much more attractive, the long sword-shaped leaves being streaked with yellow. Sow the seeds in light sandy soil in heat, and pot the young plants off as they become large enough. A soil of good rich loam and a small quantity of sand suit it well.

EXHIBITING SWEET WILLIAMS (E. M.).—You must stage the flowers in accordance with the schedule. If the term "bunches" is employed you may show as many trusses in each bunch as you choose, but if the stipulation is for "single trusses" each variety you exhibit must be represented by only one truss. We certainly consider one fine truss more meritorious than a number of small trusses crowded into a bunch; but you must stage the finest trusses you have in accordance with the schedule. The varieties should be as dissimilar as possible, and the flowers large, round, and flat with stout petals, and the colours firm and decided in the selfs, and clearly defined in the Auricula-eyed and parti-coloured flowers. A good single flower is far better than a bad double one, and *vice versa*. An exhibitor is disqualified if he fails to conform to the rules and ignores the conditions of the schedule.

TOMATOES IN GREENHOUSE (A. O. B.).—All that the plants require is a light position and plenty of water at the roots to induce them to grow and

sower freely. When four or five trusses of fruit have set on each plant stop the growth at one joint beyond them, and the fruit will swell to maturity. The first truss of flowers does not always set well, but you will have no difficulty in obtaining a crop if you attend to the plants well by stopping the growths to prevent them shading the fruit and crowding each other, and affording sufficient water. The plants may be syringed occasionally after the fruit has set, and when it is swelling liquid manure applied to the roots will be beneficial. There is no such pamphlet as you ask for.

MAGGOTS IN CELERY LEAVES (An Amateur).—The grubs are the larvae of the Celery fly (*Tephritis celeridactyla*). You must crush every one of them at once, and if you keep the foliage dusted with soot, applied as frequently as necessary when the leaves are moist, it will in some measure prevent the fly depositing her eggs. Sprinkling the plants with a solution of soft soap—3 or 3 ozs. of soap being dissolved in each gallon of water—has the same effect. We have heard of the leaves of the common Elder are boiled and the plants are watered with the "tea" that the fly will not attack them, but we have not tried this remedy. We shall be glad to hear of any remedy that has been proved effectual in destroying or preventing this destructive pest.

BULBS IN FLOWER BEDS (J. R.).—When bulbs are planted in clumps in mixed borders a stout peg should be firmly inserted to mark the positions. Charred oak pegs last a long time, but suitable lengths of stout galvanised iron are more neat and durable. When bulbs are planted in masses in beds to be subsequently occupied with summer flowers, only the early-flowering Tulips should be employed; these with *Hycinchis* usually mature their growths by the first week in June, which is sufficiently early for planting tender summer-flowering plants. Even if the foliage of the bulbs has not quite decayed by that time it will mature if the plants are taken up and laid in thinly in a rather shaded border. Such bulbs as Crocuses and Snowdrops if planted near the margins of beds can remain there without interfering with the summer bedding plants. In light sandy soil such bulbs as you name may without injury to them be covered 5 or 6 inches deep.

HARDY FLOWERS (Ebenach).—As a rule geometrically designed flower beds on lawns near the windows of a mansion are not suitable for such hardy flowers as you appear to require. Such beds have generally been formed for a special purpose, and that object being no longer desired it is generally the best plan to turf the beds over and make borders, and large beds of plain outline in more appropriate positions for hardy flowers. We know of a great number of beds that have been dispensed with in gardens, and the change is accepted as a decided improvement. It does not follow that bedding plants are not grown in the gardens indicated; they are grown in lesser numbers and other positions, and do not as formerly constitute the entire display, but share it with other flowers worthy of their company. Many beautiful hardy flowers may be raised from seed in large numbers. Amongst these are such dwarf-growing spring flowers as *Aubrietias*, *Anemones*, *Daisies*, *Arabis*, *Myosotides*, *Alyssums*, *Polyanthuses*, *Alpine Auriculas*, *Pansies*, &c. *Antirrhinums*, *Aquilegias*, *Campanulas* in variety, not forgetting *Canterbury Bells*, *Delphiniums*, *Carnations*, *Pinks*, *Sweet Williams* and other *Dianthus*. *Hollyhocks*, *Lupins*, *Lycnises*, *Gnotheras*, *Potentillas*, *Scabious*, *Wall-flowers*, and many other hardy flowers you may find in a seedsman's catalogue may be readily raised from seed sown in drills at the present time in the open ground, the plants being eventually pricked out into nursery beds preparatory to planting them in their positions for flowering. Named varieties of such plants as *Phloxes*, *Carnations*, *Delphiniums*, *Irises*, *Pyrethrums*, &c., must be purchased from the florists, as must such other perennials that you require which are not raised from seed.

NAMES OF PLANTS (G. L.).—We do not undertake to name *Pansies* nor varieties of other florists' flowers; besides, your flowers being placed in a dry box without any packing were quite shrivelled on arrival. (*W. W.*).—*Solanum jasminoides*. (*C. B. K.*).—*Kaifusda amelloides variegata*. (*E. D.*).—1, Has no spore; 2, *Adiantum pubescens*; 3, Too small for identification; 4, *Selaginella Willdenowii*. (*Reider*).—1, *Veratrum nigrum*; 2, *Autheicum Liliastrium*; 3, *Apium graveolens* (Celery); 4, *Silene Armeria*; 5, *Chelidonium majus*; 6, *Potentilla anserina*. (*A Young Gardener*).—1, *Veronica Beccabunga*; 2, *Orchis maculata*. (*S. C.*).—3, *Pholidota imbricata*; 3, *Aubrieta purpurea*. (*A. Syers*).—*Pedicularis sylvatica*. (*G. B.*).—1, *Andromeda maritima*; 2, *Spiraea ulmifolia*. (*Minghill*).—1, *Laela purpurata*; 2, *Cattleya candida*; 3, *Brassia verrucosa*; 4, *Oncidium flexuosum*. (*F. T. Arnold*).—*Asplenium viviparum*. (*G. Norfolk*).—1, *Sedum brevifolium*; 2, *Echeveria secunda*; 3, *Aubrieta Campbellii*. (*C. Keston*).—*Rosa spinosissima*, frequent on the seashore throughout Britain; it also grows inland. We have seen it growing abundantly at the foot of Ingletton, forming almost a garden with its beautiful creamy flowers about the middle of June. (*E. H. H. S.*).—We think the Fern is the Jersey Fern, *Gymnogramma leptophylla*, but in the absence of fructification it is almost undeterminable. Send fructifying fronds. (*S. M.*).—In consequence of the very small specimen having been sent in blotting paper the moisture was extracted from the spray, which arrived quite shrivelled and cannot be identified. If you will send another specimen packed in a small box, so as to arrive in a fresh state, we will endeavour to name it for you. (*M. G. S.*).—*Ceanothus dentatus*. (*Rom*).—1, *Dendrobium moscatum*; 2, *Oncidium sphacelatum*; 3, *Odontoglossum gloriosum*; 4, *Burlingtonia decor*.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

CULTIVATION OF THOUSAND-HEADED KALE.

ABOUT twenty years ago we were dissatisfied with the result of the rape crop, for although it is so forcing for sheep we found it at the same time rather difficult in folding, for the stock frequently become hoven or blown whilst eating it; we therefore, in the absence of anything better, commenced growing the cottagers' kale and the curled Scotch kale. The latter especially, with its curled and crimped leaves and its hardy habit of growth, induced us to grow it in preference to rape and recommend to our agricultural friends. With this view we saved much seed,

and it was greatly approved as a substitute for rape. When however, Russell's thousand-headed kale was first brought out and public attention was specially directed to it at the London Farmer's Club, it immediately attracted the notice of the farmers, and the value of the plant has since been proved to be so great that the cultivation has largely increased, especially during the last few years. It is likely to be maintained in the estimation of the home farmer, and we recommend those who have not grown it to give it a trial; for although it is not likely to prove an entire substitute for the best kinds of cattle cabbage as a food for cattle and sheep, yet the method and variety of cultivation by which it may be grown, together with the advantage of a succession of produce from the same stalks or stems, will be a great point in its adoption for supplying green food for all sorts of cattle both in autumn, winter, and spring; besides which it is very well calculated to supply collard-like heads as food for the people, and in some cases it is stated that the small stems and heads were sold readily at a remunerative price to the grower in large towns during the past spring when vegetables were extremely scarce.

The best method of cultivating it is a matter for consideration. Many farmers say that it should be grown by the same method of cultivation as usual in cultivation for the champion cattle cabbage, and no doubt this would give the earliest crop. Why, however, should such a valuable crop as the cattle cabbage be supplanted by an inferior crop, and usually cultivated with a different object in view as to its use for feeding purposes? In reply we say that cattle cabbage has a value for feeding both cattle and ewes in lamb, and is available at a time of year when nothing can compete with it either for fattening stock or milch cows. The cultivation may be effected in two different ways. First by drilling the seed early on the stretch, after the land has been made a clean fallow and manured; the other method by obtaining a number of plants for setting out at any period of the summer, or in the autumn as an after or second crop. The first plan of growing the crop on the stretch we recommend to be carried out upon the Northumberland system of root cultivation—viz., a clean autumn fallow, and lying all winter in stetches, then early in the spring to lay out farmyard, box, or town manure between the stetches, and then to split or reverse them, which will bury the manure in the centre of the stetch when fresh made up. The same plan, however, may be adopted either by spreading guano and superphosphate, then reverse the stetches, and drill the seed upon the stetch. It is often done with the double ridge drill, which takes two stetches at a time, so that the manure may be drilled at the same time and in the same way as when drilled on the flat. When the seed is drilled and the land prepared in this way plants may be obtained at hoeing time for making out any deficiency on the stetches, and a further advantage of this plan is found in being able at all times to horse-hoe the land, even before the plants are strong enough to set out with the hand hoe. We do not approve of setting out the plants whilst they are very young for two reasons—because the strongest plants cannot be so distinctly seen, and also because they are apt to be eaten off by wireworms or grubs whilst young and tender. In fact, before the plants are become somewhat hard and wiry in the stem they are unable to resist the attack of any insect enemy; and further, if plants are required to be reserved for planting other lands they are much better for the purpose when they are strong and the stems hard with woody fibre. There is another advantage in cultivation of roots upon the ridge or stetch system, because they can be horse-hoed at any period, and it is a maxim we advocate that by hoeing the land whilst the weeds are young there never will be any to be injurious.

We must next refer to the advantage of growing the plants in seed beds, and these should be made about 5 feet in width and well manured, and the seed drilled in rows by the hand drill about 14 inches apart. At this distance the beds can be kept clean by hand-hoeing, and the plants pulled as required without injury to the remainder; for it often happens that the plants left until the last are of much consequence in planting after a crop of vetches, trifolium, or even succeeding a cereal crop after an early harvest

In fact we think it of far more consequence, and we ask the home farmer to look to the importance of a crop which can with great advantage be planted with the spade or ploughed in after other crops. We recollect seeing a crop upon a farm occupied by a tenant of ours a few years ago in which the plants had been ploughed in—that is, laid along every third furrow, and covered in the act of ploughing. This was really one of the finest growths of vegetation we had ever seen produced in the time, for the land was gravelly; but the previous crop had been vetches folded off with sheep eating cake, and as fast as this crop of kale was consumed the land was ploughed and sown with wheat. To prevent the stumps or stalks from sprouting again where they were not eaten down level with the land, the shepherd's boy cut the stems down close with the fagging hook before ploughing for wheat. In this way no injury can occur to the wheat, but the reverse, because the roots will decay in the soil and leave some vegetable manure. In considering the question of a second crop we will suppose that the crop shall be fed off in the autumn; the produce in the spring if the stems are left for that purpose will yield an enormous crop of sheep food, and available at an early period, quite in time to be cleared off the land sown with dreg corn for consumption on the farm. When the land is well cultivated and manured the crop may be cut in the autumn and carried off the land for various feeding purposes; for the foliage will average from 2 to 8 feet in height, and the stems being thickly studded with side shoots forming heads and hearts of various sizes will produce an extraordinary quantity of green food for all the cattle of the farm, but especially for dairy cows. Whether in the winter or early spring there will be little else of the same value to be obtained on the farm, and if the greens are cut into chaff in conjunction with hay or good sweet straw it makes excellent and healthy food for milch cows and horn cattle of all ages, but particularly for calves when they first begin to eat. We notice that the seed of the thousand-headed kale is advertised at 1s. 9d. per lb., and the quantity we recommend the home farmer to drill is about 8 or 4 lbs. per acre. If we look at the growth of this kind of kale and the great quantity of side sprouts it can be readily understood that this plant when pure would pay the home farmer well to save a portion for seed for sale, especially if an arrangement can be made with any seedsmen who has supplied the seed to take the produce. The seed would be in character equal to that sown if the usual care and caution was taken as to the situation of the field, because if so far isolated as to be in the open country and away from village gardens so much the better; the home farmer may pull out every other plant throughout the field, and enough will then be left for a crop of seed.

WORK ON THE HOME FARM.

Horse Labour.—This will still be employed in the last ploughing for root crops. Swedes may yet be drilled for spring feeding, as they are found to stand frost better whilst in a growing or unripe state, and may therefore be drilled within a few days from this time for that purpose in the early districts of the southern and eastern counties. Mangold seed also may be drilled with the probability of a fair crop. It is, however, only in case of failure of the early sowing or the special requirements of the cattle that will justify the sowing at present; but under these circumstances the land should be in fine tilth and well manured, and a larger number of roots left per rod. This, however, is a good time to drill the hybrid varieties of turnips, as they grow much quicker than the Swede or mangolds. Planting cabbages, broccoli, and the different varieties of kale may now be done with advantage; and in all cases where the home farm is situated near a town it is well to grow such crops as will answer the purpose of feeding cattle, and at the same time if they are selling well as food for the people they may be sold as vegetables. This matter should not be lost sight of, for cabbages of all the sorts will answer this double purpose, so will broccoli. It is, however, very seldom that a good crop will be worth so little in the towns as to be used for feeding cattle as the only alternative. Still, the home farmer must remember that they make excellent food for cattle, and the stumps also after the heads are cut and sold can be passed through Gardener's cutter, and when mixed with meal will feed fattening cattle well, also dairy cows. There are, however, some matters which must not be neglected, or the horses allowed to be idle, for any fallows intended for wheat must be kept under tillage at every opportunity. Again, where any land is intended to be laid into permanent pasture it ought now to be clean or nearly so, because the seeds of the grasses should be sown about the second week in August. Not only the land should be prepared ready to receive the seed, but the question of varieties to be sown should be decided upon in accordance with the nature of the soil to be laid down, and the seed should be bought and ready for use at the appointed time. We do not now speak of the best plan of sowing—whether the seed should be sown on a fallow or in the growing crops of corn—but must refer the home farmer to this subject, which was discussed and described at full length in this Journal on 5th, 12th, and 15th of February last. Horse-hoeing must be continued from this time forward at every opportunity between the drills of those root crops which are sufficiently ad-

vanced to bear the work without injury to the young plants. Carting and stacking of the early crops of field hay will be going on, as also the produce of the dry upland pastures and parklands, the crops upon which land are generally very light, and will by this date have been mown and the hay ready or nearly so for stacking. All the work connected with ricking the hay should be anticipated and provided for, by carting the bays or such materials as are used for rick stands, to the place where the ricks are to be made. We think that all the hayricks should be made in the fields where the crops have grown, except, perhaps, on those farms where the parklands and pastures are contiguous to the home farm and rick yard, because it is of great importance when hay is once fit for the stack that no time should be lost by long carriage of the hay.

Hand Labour.—Much of the work on the farm will be connected with the cutting of grass and its conversion into hay, but the home farmer should anticipate every matter relating to the work of the period, and in the event of showery weather straw for thatching may be drawn and piled ready for use. The ricks may then be thatched either in hay time or harvest as soon as made. It is therefore a matter of great importance to have a man who is capable of thatching employed upon the home farm. In our past experience we have induced various young men who were labourers on the farm to learn to thatch, although they have sometimes been at first adverse to undertaking such work; they are enabled to earn more money than in the ordinary work of the farm. We recollect cases where the men were slow to begin the work, yet after practice and perseverance they have become capital thatchers and rick builders. The home farmer should adopt a similar course, for it is frequently the cause of serious injury to unthatched ricks to be obliged to wait until a professional or jobbing thatcher can be obtained. Trimming hedges should now be done the first time, and immediately after the hedge borders have been cut and cleared of the grass and weeds for the feeding of cattle, pigs, &c. This refers to quickset fences, but where the wood on the banks consists only of hazel, maple, and some other woods, we prefer to cut the wood, grass, weeds, and all close to the bank, ditch, and borders; because when cut green the cattle will eat much of the young shoots and branches of wood, as well as grass, &c. This only refers to farms where the hedges must remain from some particular cause; but wherever it can be done, as between arable fields, hedges should all be grubbed, and in some soils the ditches drained. Hedges are often retained ostensibly for shelter, but this is a mistaken notion except in very exposed situations, for corn and other crops always suffer most from the effect of storms and wind on the lee side of hedges. Again, for shelter to stock, such as sheep and cattle, they are often induced to take the shelter of fences without benefit, and leave their droppings where it does no good; in fact, generally shelter is not required for cattle, except in the winter months, when they ought to find shelter in properly arranged sheds, yards or boxes. Dairy cows should now have a constant change of pasture, for although they may get no extra food it is of consequence that they should not feed and lie constantly in one field or pasture, unless they can daily receive supplementary food at the homestead.

TOY PIGEONS.

WE are constantly asked, What are Toy Pigeons? The very term excites the interest of young fanciers. Toy Pigeons, they think, must certainly be Pigeons that play or are played with. They are not far wrong in their derivation of the term. From time to time discussions on and minute descriptions of the points of various fancy breeds have appeared in these columns. It strikes us that young fanciers are often added to the list of our readers who cannot refer to these past articles, or who are somewhat alarmed at the minutiae of detail which they find in the descriptions of Pigeons in the magnificently illustrated Pigeon books before the public. They perhaps, too, ask some fancier friend the probable cost of such a Pigeon as they see portrayed in colour, and he answers, "If you can get such a bird it will be cheap at £50." The cost and the conditional answer are neither very encouraging. There are Pigeons, however, which are extremely beautiful without being very valuable. There must, too, be a beginning of all things. Probably the proud possessors of the most perfect collections of Pigeons in the kingdom have begun with a few mongrels. We will, then, attempt in a few articles to give short descriptions of some of the prettiest varieties and some of those most suitable for a beginner.

To return, however, to our heading. What are Toy Pigeons? Forty years ago all were so called save the three varieties of the serious "fancier"—viz., Carriers, Pouters, and Almond Tumblers. In those days the fancier of any of these three varieties as his speciality looked down upon the breeder of any other kind as a mere player at Pigeon-fancying, and denominated his pets Toys. This arose probably from the greater difficulty of breeding these fancy varieties up to the almost impossible ideal standard of the fancier's imagination, and the greater number of point required to constitute a perfect bird. Of late years the love of Pigeon-fancying has become very general, and no wonder—so easily are

a few Pigeons kept in health and happiness in a small space, so suited are they to an aviary or pole house in a villa garden, so interesting in their tameness, so charming are many of them in their agile flight where they can be safely trusted, and, above all, so easily can they be seen in their beauty collected to feed in a neatly gravelled aviary. Many show fanciers who scarcely care to look round a well-ordered poultry yard are charmed at the sight of a full pigeonry, and at once declare that they must turn Pigeon keepers.

For all such as have not time for the study and care necessary to bring the high-class (as they are now called) fancy varieties to perfection, and yet wish to have Pigeons beautiful and good of their kind, the Toys are eminently suitable. Since this great increase of Pigeon fanciers has begun there has, of course, been a corresponding increase in the number of varieties bred carefully up to exact standards, and the once-despised Toys have come into favour with many, and are brought to great perfection of colour and form. Let us not be mistaken. We do not mean that Toy varieties, such as Jacobins, Fantails, Turbits, and others, have not long been bred with care for certain points—(Moore, in his work published in 1735, gave fairly descriptive accounts of these and other varieties, and Mayor in 1765 supplemented them)—but we mean that they were not in those days bred with anything like the care that the so-called fancy varieties were. While touching on the fact that fancy Pigeons of distinct types were long ago kept, we may mention that we know an antique Venetian mosaic of exquisite workmanship, the subject of which is a blue Trumpeter Pigeon feeding its white offspring under an orange bough. This work of art can scarcely be later than the fifteenth century, and the Pigeons depicted are fair Trumpeters with small roses, in form much like the white English Trumpeters shown a few years ago before the Russian type of birds was in vogue.

What breeds, then, it will be asked, do we mean to include in our category of Toys? To begin with, we put out of the question the long-recognised high-class fancy varieties—Carriers, Pouters, and Almond Tumblers. To these we will add the other short-faced marked—i.e., not self-coloured Tumblers, so now generally answering to the accepted definition of high-class fancy breeds, and one more kind—viz., Barbs. The latter we believe are generally now accepted as high-class fancy birds, and are unsuitable for descriptions like those which we propose to give, as not being, apart from their essentially fancy points, very attractive to the eye either on the score of natural beauty and elegance or even quaintness of style. The Toy Pigeons, then, which we hope briefly to write upon are of three classes. Firstly, the old English Toy varieties—i.e., those which, wherever they were originally produced, have long been known in England and recognised in the older English Pigeon books; we mean such kinds as Jacobins, Fantails, Turbits, Owls, Nuns, Trumpeters, Helmets, Archangels, &c. Second, some of the more beautiful and distinctive of the "German" Toys. Of late years there have come over from Germany in endless variety a combination of colour. It is said that an accomplished German, if only given a pattern and a few breeding seasons, will produce birds of any colour. There is some exaggeration in this, but still they introduce a marvellous variety of birds, the novelty of their points being rather in colour than in form. Many of them are very pretty, but by no means of sufficiently distinctive types to be ranked worthily among the older English varieties or to receive equal attention with them. Third, apart from both these classes great and beautiful additions have of late been made to our pigeonries by importations from the East, chiefly of the Turbit type. We must not omit to give short descriptions of the most distinctive of these.—C.

VARIETIES.

Messrs. Webb & Sons, Wordsley, Stourbridge, request us to state that at the Royal Oxfordshire Horticultural Society's Commemoration Show, held at Oxford last week, no less than twenty-one prizes were awarded to specimens of vegetables grown from seed supplied by them.

THE WEATHER AND FARM CROPS, IRELAND.—We have had little rain during the past six weeks in Ireland until yesterday (10th). Everything looked parched and dry. I have been speaking to a gentleman who has had a run through the whole of the south of Ireland, and he tells me the Potato crop is excellent everywhere, while surface-rooted crops, as oats, grasses, &c., have suffered, but not beyond remedy. I have had a look over our farm and gardens this morning after yesterday's downpour, and in the warm sunshine I cannot imagine anything more calculated to gladden the heart of the farmer than the appearance of the various crops. "Providence is both good and wise," said Dr. Cotton, "in what He gives and what denies." Let us hope the years of plenty are going to succeed the years of famine.—W. J. M., *Clonmel*.

TRANSPORTING BEES TO INDIA.—A gentleman with a large estate in New Zealand states that the effect of transporting bees to that colony had been to kill out the honey-sucking birds, some of which have become extinct and others very scarce, such

as the bell bird. Native bees in India have no need for storing for a winter's day, to which they devote so much labour in this country.

DAIRY FARMING IN IRELAND.—Since the publication of the report of Canon Bagot and Mr. Robertson on continental dairy management a great impetus has been given to dairy farming and management in the land, and larger supplies of butter are now transmitted to London, where much higher prices than formerly are obtained for the produce on account of its greatly improved quality. We find, however, that neither the producers of butter in Ireland nor the consumers in the metropolis enjoy the advantages that are desirable, as from 4d. to 6d. per lb. profit is secured by those who purchase the butter from the agents and retail it to the public.

THE HOP PROSPECTS.—Owing to the showers of rain during the past few days the hops in the Kentish grounds have made wonderful progress. The vine is rapidly growing, and bids fair to flower well. Unfortunately in some grounds the fly has appeared, but it is hoped it may be got rid of before any serious damage is done to the plants. The growers are very hopeful of a good crop.

DISEASE AMONGST DEER.—A number of the deer in the Royal parks in the neighbourhood of London have been attacked by a mysterious disease, which has proved fatal in several cases. The deer in Richmond Park have suffered severely. Several of the dead animals have been forwarded to Mr. Frank Buckland, who, in conjunction with Mr. Simmonds, of the Royal Veterinary College, is investigating the matter.

WHEAT IN THE SOUTH OF ENGLAND.—The first ears of the new wheat are reported to have been observed near Ramsgate on the 11th of June. Last year, at the same place, they did not make their appearance until the 26th of June. The season has not, therefore, been so backward as was imagined. The wheat crop is said to look remarkably well in that district.

THE SURREY BEE-KEEPERS' ASSOCIATION.—This Association, which is under the patronage of the Earl and Countess of Onslow, will hold their second County Show of bees, honey, hives, and apianarian appliances, together with practical manipulations with live bees, in the Skating Rink, Park Lane, Croydon, on Wednesday and Thursday, August 11th and 12th. The schedule consists of nineteen classes, and all persons intending to exhibit shall return their entry forms, properly filled up and accompanied by the necessary fees, on or before Saturday, 81st July, to Mr. E. S. Whealler, Local Secretary, The Waldrons, Croydon, who will also supply entry forms.

CYPRIAN AND HOLY LAND BEES.—An experiment which will be closely watched by all interested in bee culture lies in the introduction for the first time into this country of some hundreds of Cyprian and Holy Land bees by Mr. D. A. Jones of Boston, Ontario. These include 150 queen bees, and the whole were recently exhibited at the premises of Messrs. Thurber & Co., in Cannon Street, London, where they were viewed with curiosity by a large number of visitors, among them the Baroness Burdett-Coutts, President of the British Bee-keepers' Association, Sir John Lubbock, and other persons of distinction. Mr. Jones, it appears, is the owner of one of the most extensive bee farms in the world, where the hives last season yielded the enormous aggregate of 75,000 lbs. of honey. Being naturally anxious to effect if possible an improvement in the race of bees he determined to introduce some of the better species from the East into Canada, as well as into England, in order to test their qualities side by side with the familiar Italian bee of English and American cultivators. For some years past the Cyprian bee has existed in Europe, and notably in Germany; but hitherto only in very small numbers. Their superior powers of production and reproduction have been urged by many authorities, and of those which have now been brought over a large proportion belong to this species. Mr. Jones spent considerable time and labour in the Levant in making his collection, and he feels confident that he has discovered a valuable race of bees in Syria and Palestine. He states that he found them travelling twice as far as either the Italian or black bees in search of honey, while they would also fly much faster than the others, darting from flower to flower with great rapidity, and he found them in many instances at an almost incredible distance from their hives.

MR. CHESHIRE'S APIARY.

ABOUT a fortnight ago I paid a visit to Mr. Cheshire's apiary, and was greatly pleased with what I saw. At the time of my visit the stock consisted of twenty-two hives, there was not a weak one among them, and taking them all round I never saw a stronger lot, though I see many in my capacity as one of the local secretaries of the Surrey Bee-keepers' Association. Mr. Cheshire's principal care is to keep the bees warm; to do this he uses chaff hives and plenty of quilt (some of the hives had five thicknesses of felt on them), and contracts the brood nest in winter. What most interested me was to see the experiments with foundation, and I must say the wire plan which Mr. Cheshire

explained in a recent edition of your paper is a very great and important success. The sheets of foundation are put into the frame in a very short time, no wax requiring to be heated. Besides the advantage of saving time sheets the full size of the frames can be put in, the wires preventing any sagging. I saw the foundation in every stage of being worked out, every sheet being beautifully flat and true.—E. S. WHEELER, *Croydon*.

IRREGULARITY IN SWARMING.

ON the 20th May a stock in one of Baldwin's bar-framed hives swarmed, and on the 28th I heard the piping of the young queens. As the piping has continued ever since—i.e., twelve days, I have been expecting a second swarm, but none has been forthcoming. Recollecting that Mr. Pettigrew states that young queens if not fertilised within twelve days of their birth are useless, I this morning divided the stock and placed four frames of comb and bees attached, one comb having a queen not yet liberated from her cell, in a box suitable for the purpose, and left five frames of bees with the liberated queen in the stock hive, moving both 2 or 3 feet to right and left of the old stand. I had intended to have a natural swarm, but presume the unsettled weather has prevented it. Kindly inform me through the medium of the Journal if I have acted rightly under the circumstances, and also if the young queens are likely to become duly fertile, although at least one of them must now be twelve days old. I may state that on Sunday morning, 8th inst., I found a dead queen cast out of the hive; again, in the afternoon of the same day I found another, and at the same time saw a queen take wing, circle three or four times round the hive, and then disappear over some poplar trees. I immediately came to the conclusion the bees had decided not to swarm, but was greatly surprised on going to the hive again in the evening to hear piping still going on. Next morning I found another dead queen cast out, and again one more in the evening, making four in all.

Now the impression I have gained from reading various bee books is, that young queens do not leave the hive before their "marriage tour," unless it be with a swarm. Have I been in error? Also, I find Mr. Pettigrew states that he has known piping continue for seven days, leaving one to infer that this was an extreme case; and Hunter's "Manual of Bee-keeping" says "unfavourable weather may sometimes delay coming out until the fifth day." I take it, therefore, that this must be a very unusual case.—M. H. MATTHEWS.

THE above letter, which I have perused with interest, describes a case of very unusual occurrence. Mr. Matthews understands well what has been stated in bee books on the subject, and he has been expert and successful in taking a second swarm artificially from his hive. He is probably right in assuming that the weather prevented his bees from swarming naturally at the proper time—viz., after three days' piping. The fact of queens piping continuously for twelve days is an extraordinary one: probably the like has never been known before, neither have I heard of a queen piping after being out on a marriage tour. The impulses of Nature may have sent his piping queen out before her marriageable season had passed, and before the state of the weather permitted swarming. Knowing the possibilities in such cases it is difficult to determine what took place during the twelve days of piping. The queen that first left her cell may have been lost after piping some days, and her place may have been taken by one of her sisters, which would pipe like the first one in response to her barking sisters in their cells; and there is the possibility of one of the barking queens having been too long confined in her cell, and pressed by the claims of Nature escaping from the hive and going off in search of a mate. Many queens leave their cells and go out and off with second swarms in the act of swarming. There is, too, the possibility of mistaking a bee on the wing for a queen. If your correspondent made no mistake, and the queen remained out for a short time (I dare not divide the time by minutes) the bees would liberate and enthrone one of her sisters.

The casting-out of dead queens, either before or after second and third swarms are expected, is of common occurrence. As third swarms generally come off in twenty-four hours after second swarms (after piping one day only) it has been naturally believed that the maturity and ripeness of the queens for fertilisation forbid delay. As the weather was unfavourable at the time of swarming, and as Mr. Matthews' queens were ten or twelve days old, he has reason to fear that his queens may not become fertile. I have never known a queen fertilised after she was twelve days old, but last year when I was in Scotland a bee-keeper there told me he just saw a queen leave her hive on the fifteenth day after birth, and like myself he feared she would be worthless. We were both wrong, for she became fertilised and fruitful; still she might have been fertilised on a tour previously taken, as queens leave their hives more than once. On one point the late Mr. Woodbury was wrong when he said that queens invariably commence to lay two days after fertilisation. Doubtless Mr. Matthews will intelligently watch the fortunes of his two young queens; apiarian readers of the Journal will be glad to have their future history.—A. PETTIGREW.

OUR LETTER BOX.

GUINEA FOWLS (G. B. Mansfield).—Incubation occupies from twenty six to twenty-nine or thirty days. The chicks require food almost immediately—within, at most, six hours after hatching—and should be fed and cared for in the same manner as young Turkeys, though they may be allowed rather more liberty. It should be observed, however, that they require more constant feeding than any other chickens, a few hours' abstinence being fatal to them; and they need also rather more animal food to rear them successfully and keep them in good condition, especially in the winter.

PANTAIL PIGEON (S. F. H.).—The more tail feathers the better. They ought not to be less than twenty, and rarely exceed thirty-six.

CHESHIRE FOUNDATION HOLDER (S. B.).—Mr. Cheshire in subsequent communications will no doubt give the points you ask. Brass wire will do instead of pins, but is less convenient. The points of the pins would not hold the sheet sufficiently; it is necessary that they be removed. Silk braces are not used with rakes or holders. The system is quite independent.

CANARIES TROUBLED WITH INSECTS (Seldon, Sandlaere).—You must at once take means to rid the bird and cage of these pests, for now the warm weather has set in they will increase and make short work of the bird's life. The bird should be washed with tepid water and soap, a soft shaving brush or piece of old flannel being the best materials for applying the soap to the bird's feathers. After giving the feathers a fair five-minutes lather rinse them in clean warm water and dry the bird before the fire with care, not placing it too near for fear of injury. When the bird is dry and can perch put it into another cage whilst you well clean the one infested with the vermin. Previous to scalding the cage apply to all the joints and crevices oil and kerosene. In an hour or two afterwards give the cage a thorough good scrubbing and cleansing, and if placed in a room where a fire is kept it will be ready for use the following day.

DIMENSIONS OF AMERICAN SUPERS (Items).—These sections are usually 2 inches wide, and are made of lime tree wood (basewood) about three-sixteenths thick. To hold 1 lb. of honey they are $\frac{1}{2}$ inches square outside; 2 lbs. $\frac{3}{4}$ by $\frac{1}{2}$ inches; but these sizes scarcely hold the weights named.

PEA FLOUR FOR BEES (Items).—The pea flour is sold everywhere, and is put up in penny packets. Symington's or Linn's are good, but the cheapest plan is to buy by weight, when 4d. per lb. is a fair price. The "prepared" pea flour is merely peas very finely ground.

BROOD TURNING BLACK (J. P. C.).—You took two frames containing brood in all stages from one of your hives and gave them to a very weak lot. This was an incorrect manner of helping them, for the older bees returned to their former hive and left the brood to chill and perish, and the subsequent decomposition is the cause of the blackness about which you speak. Some of the older bees would, and undoubtedly in your case did, encase the queen that was strange to them. She having thus met her death a new one is being raised, hence the sealed queen cell. You might have succeeded had you shaken the bees from two frames in front of the hive to be strengthened, when the young ones would have run in and the older ones have returned to their proper home. One frame of hatching brood might then have been given in safety, and this would have made further assistance all the easier by commencing to build up the colony. In hot weather hatching (not unsealed) brood may be given without bees, when the rapid increase will provide heat enough for the augmented area of larvae. We think your plans will fail, for honey-getting and rapid increase of colonies cannot be accomplished together. Disperse your bees now and you will have weak stock, will have no honey, and will have to unite in autumn. Condense them, keep them strong, honey will come if it is to be had at all, and you will go well into winter. There is no greater waste than thinning down constantly what would be a prosperous colony to keep a weakling above water. Why is this poor stock a weakling? We should fear foul brood or an aged queen. You have already unintentionally provided a remedy for the latter evil, but respecting the first we should recommend caution.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51°32' 40" N.; Long. 0°8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.				IN THE DAY.					
	Baromet. ter. at Sea Level	Hygrome- ter.		Direction of Wind.	Temp. of Soil at 1 foot.	Shade Tem- perature.		Radiation Temperature.		Rain.
		Dry.	Wet.			Max.	Min.	In sun.	On grass.	
1890.	Inches.	deg.	deg.		deg.	deg.	deg.	deg.	deg.	In.
June.										
Sun. 6	29.835	54.3	52.8	N.W.	53.5	64.9	50.3	104.4	49.0	0.047
Mo. 7	29.810	51.3	50.0	S.W.	54.0	65.5	48.8	118.0	44.1	0.125
Tu. 8	29.794	54.3	48.7	S.W.	53.6	62.1	45.7	114.4	41.3	0.101
We. 9	29.817	55.0	49.2	S.W.	52.1	59.9	43.9	87.3	38.4	0.124
Th. 10	29.838	50.6	49.0	N.E.	52.5	62.4	41.6	86.3	34.6	—
Fri. 11	29.874	55.8	52.6	N.E.	52.4	64.3	41.2	108.1	40.3	—
Sat. 12	29.008	53.6	50.7	N.W.	53.1	73.3	41.7	118.1	38.0	—
Means.	29.831	53.5	50.4		52.1	64.9	45.9	106.2	40.9	0.393

REMARKS.

- 6th.—Rain in early morning, followed by fine bright day with cool wind; clear starlight eve.
7th.—Very wild rainy morning, cool day; bright sunshine at intervals; heavy shower at 1.35 P.M. and 8 P.M.
8th.—Cold, dull, breezy morning with rain at intervals; after part of the day very fine and clear sky.
9th.—Calm dull day, rain from 10 A.M. till 5 P.M.; fair evening. [evening.
10th.—Foggy in morning and dark about 10 A.M., cold dull day; fine in 11th.—Hazy morning, fine and warmer day, bright starlight night.
12th.—Fine and bright, and latter part of day much warmer than any day this week.

Rather cool week for the season, the maximum temperatures being especially low.—G. J. SYMONS.

COVENT GARDEN MARKET.—JUNE 16.

THE only remark we have to make this week is the appearance of outloar Strawberries, some good samples reaching us from various quarters. Business remains the same.

WEEKLY CALENDAR.

Day of Month	Day of Week	JUNE 24—30, 1880.	Average Temperature near London.			Sun Rises.		Sun Sets.		Moon Rises.		Moon Sets.		Moon's Age.		Clock before Sun.		Day of Year.
			Day.	Night.	Mean.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	Days.	m. s.			
24	TH	Teddington Horticultural Show.	73.6	49.0	61.3	3 45	8 19	9 47	5 57	17	2 13	176						
25	F	Waverley Pansy Show, Galsahieles.	72.9	49.3	61.1	3 46	8 19	10 10	7 23	18	2 26	177						
26	S	Reigate Rose Show.	74.1	49.3	56.7	3 46	8 19	10 30	8 47	19	2 38	178						
27	SUN	8TH SUNDAY AFTER TRINITY.	72.5	48.0	60.3	3 47	8 19	10 47	10 6	20	2 51	179						
28	M	[ton.	73.6	49.1	61.4	3 47	8 19	11 4	11 22	21	3 3	180						
29	TU	Rose and Pelargonium Exhibition at South Kensington.	73.0	48.6	60.8	3 48	8 18	11 21	0 a 35	(	3 15	181						
30	W	Royal Botanic Society's Evening Fête—Farnham [Rose Show.	73.1	48.2	60.6	3 49	8 18	11 40	1 47	23	3 27	182						

From observations taken near London during forty-three years, the average day temperature of the week is 73.3°; and its night temperature 48.8°.

EXPERIENCES IN FRUIT-GROWING—PEACH BLISTER.

It is a question whether we learn most from our successes or our failures. If from the latter we may reasonably be supposed to have advanced considerably within the last two or three years. Certainly we have been taught humility, for with all our boasted scientific cultivation we cannot command a crop of either Apples or Potatoes; and in many points of culture, where we flattered ourselves that we were approaching the goal of perfection, we find we have, if not to retrace our steps and begin afresh, at least to discard many that were once considered essentials. It is not, however, to radical changes which are being forced on us by the course of events, but to a few minor observations that I wish to direct attention in this and possibly succeeding papers.

There is one point in Peach culture over which my friend Mr. Luckhurst has fought more than one paper war against high scientific authorities, and I must confess that my sympathies, not to say convictions, were generally on Mr. Luckhurst's side. That Peach blister was caused by cold winds I had no reasonable doubt, for what could be more likely than that the tissues should be checked and crippled in their development by a cold south-easter, and that afterwards when new matter was supplied for their enlargement, finding it impossible to elongate they should thicken, as we believe many plants do? Vines for instance, which have been forced early in a high temperature without sun, will have thin flabby foliage, that when the outside air becomes genial so that it can be admitted in large quantities, will thicken considerably and become covered with warty excrescences. Again, was it not proved that Peach trees which were sheltered on the east side by a buttress, or that were near the north-east corner of an enclosure, suffered little or nothing from blister? The insect theory was of course scouted by practical men, who had often seen the evil where no insect had been visible, though they had daily watched the unwelcome monstrous growths. Now, I believe I have a clue to the mystery, and will put your readers in possession of the facts, which are very simple, that they may judge for themselves.

Last winter I had occasion to remove some young flat-trained trees (about twenty) from the houses where they had become too much crowded, and as there was no room for them indoors, they were planted against a south wall where other trees had failed. The best of those previously on the wall were left in their places, and in some cases the young trees from the houses were planted between them and quite close to them. As most of us know too well it was a bad season for transplanting—bad in the autumn because we had no summer to ripen the wood, bad in winter because of the severity of the weather, and bad in spring because of the drought. While waiting for a favourable season for transplanting, the bloom buds commenced swelling, and in January when taken out of the houses the trees were so far advanced that just a little colour

could be seen in some of the flowers. Still there was no chance of planting them properly at that time, and they were merely laid-in by the heels in the open ground with no protection whatever for their heads, although on the 28th January we had the thermometer at 4 feet above ground down to 13°—i.e., 19° below freezing point. When a favourable opportunity occurred, which was early in February, they were planted where they now are, and as I had no idea of having any fruit from them this year, they had no protection excepting a coping board; but strange to say, for once in my life I am rewarded for my neglect with beautiful clean growth, and even a few good fruits. Not a shadow of blister has been on any one of those which were brought from the houses, while those which were previously on the wall have a great deal of it. Your readers can judge for themselves, but my conclusion is that blister cannot be produced on well-ripened wood, and I have some other testimony in favour of this view. On another wall some maiden trees had been planted twelve months before. Their stems had been left as far as they were fairly ripened, most of them, indeed, their full length, and growth encouraged on each side of the stem, which was upright all the way up. Of course, in such a season this growth never ripened, the leaves being as green in January as in July, and I thought the trees useless. But as there was no chance of procuring good plants in this country, I allowed them to remain, cutting off every particle of new wood, leaving nothing but the bare, straight, hard sticks. These trees, too, of which there are two or three dozen, have not shown a sign of blister, but have made excellent growth.

Another lesson I have learned from these same Peach trees is concerning insects, and more especially green and black fly. Those trees cut hard back, as well as those brought from the houses, were perfectly clean and have remained so almost up to this time, while those which received the ordinary treatment had many insects on them before the flowers were fairly open, when it was impossible to clean them, and consequently their growth is much later and not nearly so good. Covering had nothing to do with it this time, for no fruit was expected and no covering was used. I am persuaded that the hiding place for insects' eggs in winter is rather about the young growths of the trees than in the walls, be they ever so old and broken, and that cleanliness in summer and autumn is the remedy. Peach buds start swelling in spring as early as insects begin hatching, so there is little chance at that season to exterminate them. Cherries are later in starting, and it is possible to clean them before the flowers open, as proved and described by me this spring. I know it is recommended by great authorities to kill the eggs of insects in winter, but it is much easier to talk and write about it than to accomplish such a feat. It takes a very strong dressing to kill eggs, and it is very difficult to apply it in the exact place where it is most wanted—i.e., the invisible cavity between the buds and the wood.

Yet another thought about my Peach trees. I wonder whether I should have had as much fruit as I now have if I had covered them with frigi domo. It is quite possible we make them more tender by overnursing. Finally, should

I have had a full crop had I taken my trees outside before their buds commenced swelling?—WM. TAYLOR.

THE PROSPECTS OF THE ROSE SHOWS—IRISES.

So far as I can see from a somewhat limited survey, the prospect of the Rose shows is indeed *coulour de Rose*. I never saw plants looking better. They are freer from blight than I ever knew them to be before, and although they have not made such robust growth as we should like to see, yet the bloom buds are numerous and firm, and the foliage is clean. The weather has been most favourable to the plants that survived the rigours of the winter. The long cold spring kept the young wood back, and then the splendid hot weather in May brought them on finely; and just as the blooms were coming with a rush, and the great exhibitors down west began to fear that their Roses would be all over before the National Rose Show was held, rain came, followed by a season of damp, cold, foggy weather, which effectually checked their too rapid progress. Altogether I have good reason for believing that we shall have an exceedingly good season, and my only fear is lest the show fixtures are too late.

The few Teas I have were never finer than they are this year, particularly Marie Van Houtte, Rubens, and Souvenir d'un Ami. Gloire de Dijon is covered with bloom, which though of poor merit is most valuable as a gay ornament to walls and trelliswork. Many of the more tender Teas have succumbed to the rigours of the winter; but what can we expect, when Pyrethrums and numbers of herbaceous plants have been destroyed?

Irises, particularly the bearded section, are now grandly in bloom, and as ornaments to the flower garden cannot be too highly praised. Of these there are an immense number of varieties worth growing, and it is a little difficult to mention any as super-excellent without doing an injustice to the others. But I must name a new variety from Albicans called "The Bride," the standards and falls being pure snow white.

Another good variety which has been in commerce some time is a form of *Neglecta* called "Victorine." The standards are white mottled with blue, the falls are violet blue, the upper part mottled with white. A variety of *Variegata*, called after my unworthy self, is a most beautiful one. The standards are yellow, the falls ruby velvet.

The English and Spanish bulbous Iris are now coming up very strongly, and showing large bloom buds. Perhaps these are a more valuable section than the Bearded Germanica, because the flag-like leaves of the latter cannot be called ornamental when unrelieved by the flowers. I often wonder that these flowers are not more generally known. They are very cheap and very ornamental, and very little in the way when out of bloom; but I am confident that there is no class of hardy plants so much neglected and so little known as the Iris. I have sent blooms to friends in this neighbourhood who have lived among flowers all their lives, and they have told me that they had never seen such before, and did not know there were such. Some very valuable articles upon the bulbous Iris have been appearing in the Journal during the winter and spring, and I hope the writer will continue his research into the Barbata and Beardless section, and give your readers the benefit of his advice. No one will be more grateful than myself. The Beardless Irises are inferior in size to the bearded forms, but surpass them in the blending of the colours.

The *Sibirica* section of the Beardless Iris is very fine, particularly *Grandiflora præcox*. Most of the varieties of this Iris are vigorous growers, and bloom very freely; but one of the most curious as well as finest is *Iris iberica*. This also is with me very delicate. These Irises like a sheltered situation, and also some amount of shade and protection from other plants. Grown amongst *Rhododendrons* or herbaceous *Asters* they do very well; but the bearded forms I find do better by themselves.

There is another grand species not yet in bloom quite distinct from the others, a species which is every year becoming better known and more valuable. I allude to *Iris Kämpferi*. These are in foliage very like the Beardless, but in the form of their flowers are quite distinct. They have expanded flat blooms, rather like those of the *Clematis*. They are rather expensive, but will, I hope, in time be cheaper as the stock becomes larger. The *Kämpferi* forms also like a sheltered spot and a turfy peaty soil, and do very well among American plants. These are the last to bloom.

The species of Iris which is least interesting, and which I do not advise anyone to grow until they have obtained a good

supply of those previously named, is the Dwarf Iris. It has only one recommendation—the early period at which it blooms. The flowers of these are very small and insignificant; they do not stand erect on stalks, but burrow among the foliage, and they take up a good deal of room.

When room can be found for only a few varieties of Iris I should recommend cultivators to be content with the English bulbous Iris, and a few of the most ornamental specimens of the Barbata section, particularly those culled from the *Variegata* and *Neglecta* families; but in this case the Irises should not be grown by themselves, but form a part of a border devoted to herbaceous plants. Then their reedy leaves are to some extent obscured by the foliage and flowers of other plants, and when out of bloom they are no disfigurement. A mixed border in front of the windows of a house is a very interesting adjunct; but the flowers therein should be selected with the greatest care, those only which may be called the most gay and decorative being chosen.

I hope in some future number to make an attempt at giving a list of hardy herbaceous bulbs and other plants which may fitly be used in such a bed. No plants shall be named which I have not proved; and although I am fully conscious that such a list will be very imperfect, and that no doubt many of your readers would much improve upon it, yet such as it is I hope it may prove useful to some who have not much opportunity of studying the question.—WYLD SAVAGE.

CUCUMBER FAILURES.

I SHOULD feel obliged if you could find space in the Journal to discuss the subject of spot or canker in Cucumbers. My plants are badly infested, and I am at a loss to know the cause or remedy. I have never been troubled with this disease until I came to my present place, always believing it to be caused by improper treatment—by not giving proper attention to ventilation and shutting-up, overwatering with cold water, and not sufficient heat, &c.; but I am now prepared to say this has not been the case here. It is not confined to one house or pit, but throughout, and plants raised on the place and taken away in pots to a distance are also badly infected. Is this disease contagious? Are my pits tainted with it? As I am informed it was very bad here last year, when like myself my predecessor knew neither cause or remedy, I should be glad to have replies on this subject.—M. RICHES.

AURICULAS AT SHOBDEN HEAD, HALIFAX.

DURING my forty years' and upwards acquaintance with the Auricula it has been my lot to see it in very varied positions and under circumstances more or less favourable to its culture—in the sheltered gardens of the south, in the back streets of a big city, in the bleak regions of the north, in the murky atmosphere of a huge manufacturing town, but never before have I seen them grown at an elevation of 1000 feet above the sea level; but a courteous invitation from Mr. Woodhead, and the knowledge of what his plants are from some specimens I had seen of them, induced me when lately in the north to do so, and I may say that never was "virtue more fully rewarded" than in the result.

I arrived at Halifax in the midst of one of their great days—the annual meeting of Sunday-school scholars and teachers, who to the amount of twenty thousand meet in the Piece Hall, an enormous building open to the sky and capable of holding that number. The whole place was alive. Cabs, I felt, were impossible, or, if to be had, enormously dear; so I determined on the walk—four miles. The day was bright with a cool north-east wind blowing, just the day for a walk if one were a little prudent not to sit down in draughts or disrobe oneself of outer garments. I asked my way, and as usual two different accounts were given me. A very hazy idea of where Shobden Head might be apparently existing in the minds of the Halifaxians I chose one, and as a matter of course took the wrong one, Mr. Woodhead informing me that I had made the journey four miles instead of three. It was a lovely walk, and as I trudged on could see in the far distance on the top of a high hill the tall chimneys of a brewery, which was evidently the goal to which I was wending, not with visions of pale ale and stout before me—for am I not a teetotaler?—but with the knowledge that on that high eminence was to be found the collection I was anxious to see. At last up hill and down dale, over roads that were not made for tender feet, and in narrow valleys where the sun came down in fierceness, and as a

consequence the perspiration came down my face, I at last reached the brewery and Mr. Woodhead's house; and as I walked inside the door I could not but feel thankful, not that my walk was over, but that at my venerable age I could in an hour and twenty minutes get over four miles of such a walk with no further inconvenience than a pretty good appetite for the luncheon Mr. Woodhead and his excellent sister had provided. At any rate, thought I, heart and lungs cannot have much the matter with them, and surely for such mercies one might reasonably rejoice. I was fortunate enough to find there Mr. George Rudd of Bradford, the well-known and successful florist, and so we were enabled to have a very pleasant chat together, the only source of regret from all parties being that the time was so short; but as many a youngster has shown to the astonished old stagers how much may be done in the twenty-minutes halt allowed in a refreshment room, so a great deal may be done in the matter of talk in a two-hours conversation.

Mr. Woodhead's small garden is almost taken up with glass structures. Besides his two Auricula houses and frames he has two houses where Miss Woodhead, who shares her brother's tastes, has her flowers growing—a nice collection of Chrysanthemums, and has her house always gay. But it is of the Auriculas I must write. These are grown in two houses, the named established plants in one and the seedlings in another, and never have I seen a collection which exhibited more manifest proofs of skill and intelligence in cultivation or was so rich in the very best varieties in cultivation. The house in which the named varieties are grown is 24 feet by 10 feet, span-roofed. The beds or shelves on which the pots are placed are 3 feet 6 inches wide, and the pathway 3 feet. The ventilation is perfect: front, back, and top can all be used to admit air. The front bed contains 350 pots 5 inches in size, and the back bed five hundred pots 4 inches wide inside measure. Thus a row of seven pots fills the space from back to front; and it may give some idea of the richness of the collection when I say that Mr. Woodhead intends to restrict his collection in future to thirty-five plants—that is, five rows of George Lightbody, Colonel Taylor, Smiling Beauty, Alexander Meiklejohn, and such crack kinds. The plants were perfect—large leathery leaves, not having the drawn appearance I have seen in some large-sized plants, but like young stout Cabbages. The seedling house is 21 feet by 10 wide, beds 4 feet wide, and the pathway 2 feet. The seedlings are all pricked off into boxes, which occupy less space, are easily moved from place to place, and under this treatment they thrive most vigorously, and are upwards of three thousand in number. The offsets are grown in frames. Both houses are heated with hot water, which, however, is very sparingly used. In these cold regions heat is put on for a few days during top-dressing and frost is excluded, but nothing more. Mr. Woodhead deprecates the use of heat as advocated by some growers, and says if he lived in a milder climate he should never think of using it.

When asking me to pay a visit Mr. Woodhead said, "I should like you to see my collection, as the plants are all grown in glazed pots, and I know you have an idea that they cannot be done well in them." I had the old-fashioned idea which has been dunned into me all my life, that porous pots are required for all sorts of plants, yet here was this flourishing collection grown in highly glazed pots. The mineral glaze also in the more recently made ones occupied 2 inches of the inside of the pots, the advantages which Mr. Woodhead thinks they afford being that the watering need not be anything like so frequent, and no green matter forms on the pots; and if the proof of the pudding be in the eating there can be no second opinion as to its perfect adaptation for the end. Mr. Woodhead uses what many would consider too rich a compost—two measures of rotted cow dung, two of good fibrous loam, and one measure of charcoal, round grit, sharp sand, and leaf mould; but he does not use more than 2 inches in depth of compost, the rest of the pots being filled up with drainage, an oystershell at the bottom, and then broken pots. He agreed with me that good loam is the staple on which to rely, and Mr. Rudd mentioned a collection, of which, too, I had some knowledge, which has been nearly ruined by using some indifferent loam. We had, of course, a chat upon the woolly aphid. His opinion is entirely in accord with my own, and so strongly does he dread its introduction into his collection that it was his principal reason for his not coming to the Southern Show, as he feared his plants might catch it. He would on no account introduce a plant from another collection into his without washing it thoroughly and drying it before potting.

I have been laughed at and sneered at for my dread of it, and I was therefore glad to find that such intelligent growers as Mr. Woodhead and Mr. Rudd agreeing with me on this point.

I may mention that in the matter of seedlings Mr. Woodhead proceeds in a thoroughly scientific method in his hybridising, and from what I gathered from him several of those who are engaged in it are a little out in their practice. He has some most promising flowers, and I imagine we shall hear by-and-by a good deal of some of them. In one point he is as particular as my old friend George Lightbody. He will not have an Alpine near his place, and he says he is not troubled with Alpines amongst his seedlings. Like every seedling-raiser he is desirous of adding to our most limited class—white edges. We want flowers with the edge of Glory or Catharina with somewhat more quality. In fact, as we talked over matters we did not consider there were more than three or four really white-edged flowers.

The compost yard was an interesting part of the establishment. There were large supplies of good sound-looking loam, rotten cow manure, sheep dung, leaf mould, and charcoal. Mr. Woodhead uses simple composts, but the materials must be good of their kinds.

When I said some years ago that florists' flowers were at a discount in the south, I was looked upon as a black sheep amongst florists, and branded as one who had never done any good to floriculture! I see no reason to alter my opinion. Why, here, at Halifax, there are more growers and exhibitors of Auriculas than in all the south of England. It is true that there are a number of good friends of horticulture who subscribe liberally to get up a good schedule, which the northern eagles scenting the prey from afar, swoop down upon and carry off the eagle's share, but this is not southern but northern zeal. There are around Manchester, Newcastle-on-Tyne, Bradford, Todmorden, and other places in the northern counties, a host of growers who every year are increasing in numbers. Mr. Rudd told me that he had one order from Newcastle for five hundred plants. People come to the show, but they carelessly pass by the Auriculas, and gaze upon the Orchids, Roses, &c., unless it be that small and select circle who are afflicted with Auricula mania, as some have called it.

I cannot conclude these few notes of a most extensive and valuable collection without saying that I was most hospitably received in true Yorkshire fashion by Mr. Woodhead and his excellent sister, who did their best to make my visit, if short, most thoroughly pleasant.—D., Deal.

DOUBLE PYRETHRUMS.

HAVING grown these with tolerable success for several years, I read with interest the notes of Mr. Wright on their cultivation, most of which agree with my experience. I have never had any reason to doubt their hardiness, for in a cold garden on clay soil I have for the two last autumns planted out plants raised in pots from side shoots pulled away from their parents in June, which I find produce the best flowers the following year, and have hardly lost a plant during either winter. I have found one cause of failure, and one only—the slugs, which during the end of winter eat off the growth as it forms before it is visible above ground. To prevent this, I always put an inch deep and wide of fine coal ashes and soot round the crown of the plant when I plant it out, which preserves it. When the leaves have made a good start and are growing vigorously, the slugs leave them alone. There is only one other genus with which the slugs are equally troublesome—the Delphiniums. Some years ago I was in Mr. Turner's garden at Slough, in the month of May, and inquired whether they grew the double Pyrethrum, then a comparatively new plant. The foreman pointed to an empty bed, and expressed some surprise that they were not up yet. I uncovered the crown of one or two plants, and showed him that they were covered with slime, and pointed out the true cause of the failure. All soils suitable for Pyrethrums will not grow Carnations, for with the latter I fail utterly. There are certain peculiarities of certain soils which nothing will remedy or explain.—C. WOLLEY DOD.

BLACK RUST ON VERBENAS.—The black rust of the Verbena is assuredly caused by a lowly organised member of the animal world, belonging to the order Acarina, family Acaridae, and according to some systematists' classification to the sub-family Tyroglyphidae or cheese-mite group. Its generic (perhaps) and its specific names are yet unheralded, but will be announced some time soon in an appropriate place and manner.

The following is from personal observations during the year now closing :—The *Verbena mite* is too small to be seen without a magnifier, being one-hundredth of an inch long by one two-hundredths wide across the middle and widest part of the body ; it is pale-yellowish white and sluggish in its motions. They infest abundantly plants growing in the open ground throughout the summer, and in such situations work upon older full-sized leaves as well as the tender extremities of the plant ; they rarely, however, are met with on the upper sides of such leaves. As long as the plants themselves survive in autumn the mites may be found living and working. Greenhouses and cold frames are very liable to become stocked with mites upon plants taken from the open ground in autumn. This is worthy of especial notice, and should be thoroughly understood by those to whom the black rust is such a bugbear and the source of much loss. Besides the purplish colour exhibited by the foliage, which is the principal evidence of the presence of the mite, older leaves have a scaly appearance from the death of patches of the epidermis and adjacent tissues ; the surfaces become rough, and the leaves look old and are often ragged, and upon handling stiff, liable to break. For the greenhouses it will doubtless be wisest to practise prevention rather than cure, admitting no plant which from its appearance harbours the scourge. But cure is certainly not impossible. Dipping repeatedly at intervals of a day or two in hot water at 120° Fahrenheit must be useful in ridding them of the mite. A half pint of coal oil in two or three gallons of water, well mixed by rapidly drawing up and discharging with force from the syringe the contents of the vessel into itself, and then quickly refilling the syringe with the agitated liquid and freely applying it to the plants, will not injure the vegetation, but will kill all kinds of insects which thus infest plants.—(*American Gardeners' Monthly*.)

YORK FLORAL FÊTE.

JUNE 16TH, 17TH, AND 18TH.

THIS extensive and attractive horticultural Exhibition was, as usual, held in the Bootham Field, and although there was a falling-off in some of the classes, yet others being exceptionally good amply supplied the deficiency. One great feature last year, the absence of which at this Show was very noticeable, was the grand specimen stove and greenhouse plants that occupied the central tent, but the Pelargoniums were simply magnificent, even better than they were last season. The miscellaneous exhibits were not quite so numerous, one of the absentees being Mr. B. S. Williams of Upper Holloway, whose groups were so much admired at previous exhibitions. The arrangement was as usual generally satisfactory, the great labour attendant on the management of such a large Show necessarily preventing absolute completeness ; however, considerable credit is due to Mr. Wilson, the able Secretary, who conducts the Exhibition with so large a share of success. The tents were disposed as in previous years—namely, five or six long marquees radiating from a central circular tent which contained the groups of miscellaneous plants.

PELARGONIUMS.—By far the most attractive portion of the whole Exhibition, as regards the display of bright colours and the general good condition of the plants shown, was formed by the numerous highly meritorious collections of Pelargoniums, which entirely occupied one long marquee. No less than thirteen classes were devoted to these beautiful plants, liberal prizes being offered in all, and in consequence the exhibits were very abundant and of excellent quality. Considerable taste and care were manifested in the arrangement, and the *tout ensemble* of the tent was so extremely beautiful that it was very greatly admired by all who visited the Exhibition. A low sloping central stage extended from end to end of the tent, and on this were arranged the Show, Fancy and Zonal varieties, one side being devoted to the two former and the other to the latter, the division line being formed by the large specimen Fuchsias. The Tricolor and Bronze foliage varieties were placed on a stage which occupied three sides of the tent, and thus presented an agreeable foil to the brilliant colours in the centre.

Show Varieties.—These were uncommonly well represented, the specimens being vigorous, flowering profusely, and the colours very bright and clear. The principal open class was that for twelve specimens, and four collections were staged, the chief position of honour being obtained by Mr. C. Ryland, Bold Lane Nursery, Aughton, Ormskirk, with superbly grown plants about 4 feet in diameter. They were very evenly trained, and bore numerous fine trusses of large symmetrical blooms. The speci-

mens were all so nearly equal in merit that it was difficult to select any of especial excellence, but the following were particularly notable for their profusion of flowers :—Queen Bess, very handsome, some of the blooms nearly 4 inches in diameter ; Prince Leopold, colour wonderfully bright ; Brigantine, beautiful ; Patience, fine ; Rob Roy and Kingston Beauty, exquisite. This grand collection well deserved the honour it received, for a finer is rarely seen at any local or metropolitan show. Messrs. Lazenby and Sons, Clarence Nurseries, York, followed with a good selection of healthy plants that were, however, not quite so large or well flowered as those just described. Among them Duchess of Edinburgh, Queen Bess, Triomphe de St. Mandé, Mary Hoyle, and Pericles were exhibited in admirable condition, the blooms being very fine. Mr. H. May, Hope Nurseries, Bedale, was third with a neat collection, one plant of Maid of Honour being extremely fine ; and an extra prize was obtained by F. W. Tetley, Esq., Fox Hill, Weetwood, Leeds (gardener, Mr. Eastwood) for specimens that deserved the recognition they received. In the amateurs' class for six specimens the premier prize was adjudged to J. T. Hingston, Esq., Clifton, York (gardener, Mr. R. McIntosh), for a handsome collection, including the following varieties in first-rate form—Rob Roy, fine ; Duchess of Edinburgh, with grand trusses ; Prince Leopold, very bright ; and Plantagenet, also good. Mr. Tetley gained the next position of honour, his plants being scarcely so compact as the others, but of excellent quality. Claribel, Mary Hoyle, and Conqueror were noteworthy. T. Simpson, Esq., Bardon Hill, Weetwood (gardener, Mr. W. Winterbourne) was third with fair specimens. Several collections of three plants were staged, the best being those from Miss Steward, The Laurels, Bishopthorpe (gardener, Mr. R. Gowthorpe), and Mr. T. Simpson, who obtained the two chief prizes.

Fancy Varieties.—Though less numerous than the Show varieties these were admirably represented in several collections. First honours were taken by Mr. C. Ryland in the open class for six plants, his specimens possessing similar freshness to that distinguishing those in the other classes. Some of them exceeded a yard in diameter, very compact in habit and flowering most profusely. Delicatum was in exquisite form ; Lucy, very bright ; Juliet, good ; Roi des Fantaisies, Duchess of Edinburgh, and Sarah Turner all beautiful, completed the collection. Mr. F. W. Tetley occupied the next position, and exhibited very bright even plants, the remaining prize being secured by Messrs. Lazenby and Sons. Mr. Tetley staged the only collection of three in the amateurs' class, and was awarded the chief prize for most healthy plants.

Zonal and Nosegay Varieties.—Two classes were devoted to Zonal Pelargoniums, one for twelve and the other for six specimens, and in both the competition was close and the exhibits good. Mr. Alderman Walker, Bootham Terrace, York (gardener, Mr. W. Stephenson) was awarded the premier prize for twelve plants, that although somewhat loose in habit were of good varieties and bore trusses of great size, the individual blooms also possessing great substance and neatness. Amaranth with enormous trusses ; Craven Fox, Sparkler, and Corsair were very beautiful. Mr. J. T. Hingston was adjudged the second prize for extremely even well-grown specimens, but not quite so well selected as those in the other collection. Some dispute arose concerning the accuracy of the judging in this class, the last-mentioned collection being considered by several exhibitors as worthy of the first prize, but the Judges' decision was undoubtedly correct, the superiority of Mr. Walker's plants consisting, as we have already pointed out, in their fine trusses and good varieties. Equal third prizes were accorded to Mr. R. Simpson, New Lane, Selby, and Messrs. Lazenby & Sons for collections that contained several meritorious specimens. Mr. T. Simpson was first in the amateurs' class for six plants with vigorous well-flowered examples of Grand Duke and Rose Rendant among others. Mr. F. W. Tetley, Mr. J. T. Hingston, and Mr. Alderman Walker were second, third, and fourth respectively.

Tricolor and Bronze Varieties.—These were in excellent condition generally, the colour of the foliage being clear and bright, and the growth vigorous. In the open class for six tricolors there were no less than seven competitors, all staging plants very close in merit. Mrs. E. Jackson, Pocklington (gardener, Mr. W. Barnes) gained the first prize for neat specimens in which the colours were finely developed. Mr. Laing, Italia Unita, Flambeau, and Mr. Clutton were exceptionally fine. Mr. R. Simpson followed with well-coloured plants but not quite so symmetrical ; Captain Brooshoof, Kirkella, Hull (gardener, Mr. S. Swann) and Mr. Hingston securing the third and fourth prizes with good plants. The chief exhibitors in the amateurs' class for three plants were A. J. Cholmley, Esq., Newton Hall, Rillington (gardener, John Hemming), Mrs. E. Jackson, and Mr. H. Banks, New Lane, Selby, all of whom staged neat and bright specimens. Mrs. E. Jackson had the best collection of six Bronze varieties in the open class, the plants being in superb condition. Vicar of Wakefield, Black Douglas, and Marshall MacMahon were especially noteworthy. Miss Wharton, Burton Grange, York (gardener, Mr. G. Clarke), Mr. Alderman Walker, and Mr. R. Simpson also exhibited healthy plants, and obtained the other prizes in the class. Miss Wharton and Mrs. E. Jackson were the chief prizetakers with three plants.

Double-flowered Varieties.—Although several fairly good collections were shown the majority did not possess the merit that distinguished the other classes of Pelargoniums. Mr. R. Simpson was first with six well-grown specimens, Madame Buchner, Andrew Henderson, Asa Gray, and Madame Rendatler being very fresh and vigorous. Miss Wharton and Mr. A. Simpson, Hewart's Nurseries, followed in the order named with fairly good plants, but bearing small trusses. Mr. J. Gowthorpe, Bishopthorpe, had the best three plants, including Victor Lemoine in admirable condition, Mr. Tetley and Miss Wharton obtaining the remaining prizes.

STOVE AND GREENHOUSE PLANTS.—The display of these plants was not so good as usual, the exhibits being few in numbers; and the great specimens that were so imposing last year being absent rendered these classes comparatively unattractive. Only two collections of twelve plants were contributed, the chief award being easily obtained by Mrs. E. Cole & Sons, Withington, Manchester, with neat specimens of moderate size. *Vinca rosea* was very symmetrical and flowering profusely. *Allamanda nobilis* had some enormous flowers. The handsome *A. Wardleana* was also shown in fine form, a good specimen *Dracophyllum gracile* and several *Heaths* being the other chief features of the group. Captain Hincks, Breckinbro, Thrusk (gardener, Mr. W. Hayward), following with smaller specimens, but well flowered and in excellent health. In the class for six the principal position was accorded to the Earl of Zetland, Upleatham, Marske (gardener, Mr. E. H. Letts), for the only collection, which included a handsome *Stephanotis floribunda* about 5 feet high, very vigorous and well trained; a floriferous example of *Azalea Brilliant*, and *Ixora coccinea* with fine trusses. The same exhibitor obtained similar honours with three specimens, *Allamanda grandiflora* and *Dracophyllum gracile* being notable for their symmetry. G. Talbot, Esq., Southfield, Burley, Leeds (gardener, Mr. H. Wright), was second, his best plant being a neat *Clerodendron Balfourianum*. Captain Hincks was third, and staged a very large *Tetratea verticillata*, untrained, but growing most vigorously.

Roses.—One of the long tents was appropriated to these plants, but though the exhibits were fairly numerous the general quality was not of a high order. Most of the collections, however, contained some noteworthy specimens, and if the blooms were not so abundant or fine as might have been desired, yet the plants were mostly in vigorous health. One of the principal exhibitors in the five open classes was Messrs. Pybus & Sons, Monkton Moor, Ripon, who were first with six, nine, and single specimens, all the plants being in fairly good condition, and the blooms fresh and bright, but rather rough in several instances. Some of the varieties that were best represented were Madame Thérèse Levet, Juno, John Hopper, Madame Lacharme, Edouard Morren, Princess Mary of Cambridge, Charles Lawson, and Miss Hassard. Mr. Tetley and Mr. Hingston followed with collections of six very clean and good. Messrs. Jackson & Co., Bedale, took the second position with nine specimens, *Sénéateur Vaisse* and *Marquise de Castellane* being well shown. Mr. H. May was third with carefully selected varieties, but rather poor in habit. Messrs. Jackson & Co. secured the premier award for fifteen distinct varieties, the plants being healthy and justly entitled to the honour accorded them. Marie Baumann and Maurice Bernardin were among the finest. Mr. H. May (second) had plants of medium quality, and Messrs. Pybus (third) also fair. The Rev. G. E. Gardner, The Vicarage, Hewart, York, obtained the second prize for a single specimen plant of a light-coloured variety with a *Maréchal Niel* of average merit.

Orchids.—There was not a very extensive or brilliant display of Orchids, only five collections being staged. The best six were from Dr. Ainsworth, Broughton, Manchester (gardener, Mr. E. Mitchell), his collection including clean healthy specimens of moderate size. *Thunia Marshalli* had three good spikes; the pretty *Phalænopsis Luddemanniana* flowering well; *Calanthe veratrifolia* and *Cypripedium barbatum* being also good. Captain Hincks was second, an example of *Lælia purpurata* being very attractive. Dr. Ainsworth also held the chief position with three plants, *Epidendrum vitellinum majus*, *Cattleya Mendelli*, and *Aërides Lobbi*, all neat and fresh. Capt. Hincks and Mr. Tetley were second and third respectively with rather small plants.

Calecdarias.—The finest collection of these plants was that from Miss Steward, which gained the highest award for eight specimens; they were very good in habit, dwarf and compact, the foliage fresh and robust, the flowers large, brightly coloured, and of good form. W. Dove, Esq., Crown Cottage, Hewart Green, York (gardener, Mr. R. Berry), secured the second prize with plants that were very near in quality to the first, their only defect being perhaps a slight want of compactness. Mr. A. Scott, Monk-gate, York, followed with specimens of average quality as regards habit, but bearing blooms of good size and colour. A class was also provided for four plants, and in that W. Thomlinson-Walker, Esq., Clifton Grove, York (gardener, Mr. W. Hutton), staged the best collection, Mr. T. Simpson and Miss Steward exhibiting well as second and third respectively.

Fuchsias.—Two classes were devoted to Fuchsias, one for six specimens and the other for three, Miss Wharton being first in both classes with large well-grown symmetrical specimens bearing

a fair quantity of flowers. Mr. G. Talbot, Mr. Hingston, and Mr. Alderman Walker followed with specimens of medium quality.

FINE-FOLIAGE PLANTS.—The competitors in the two classes devoted to fine-foliated plants were not very numerous, but the general quality was much above the average at exhibitions. With eight distinct specimens Mr. E. H. Letts was first, his collection including a fine example of *Croton Weismanni*, the foliage being richly coloured. *Gleichenia rupestris glaucescens* was extremely vigorous and fresh, *Cycas revoluta* large and graceful, *Croton majesticus* excellent, and a good *Dasylirocn acrotichum*. The second position of honour was obtained by Mrs. E. Cole & Sons with the only other collection in the class, their most noteworthy plants being a robust *Croton angustifolius*; a fine *Thrinax elegans*; *Pritchardia pacifica*, with very large foliage even for this noble Palm; *Cocos Weddelliana*, and *Latania aurea*. Mr. T. Simpson had the best four, including fine specimens of *Pandanus Veitchi*, *Dasylirocn glaucum*, *Cycas revoluta*, and *Eucephalartos villosus*. Mr. A. Scott followed with neat examples of *Yucca aloifolia* and *Cocos Weddelliana*, and an extremely large healthy *Screw Pine*, *Pandanus utilis*.

FERNS.—These were not only abundant, but in the most healthy condition possible, some of the specimens being also exceptionally fine in size and symmetry. They occupied one of the long tents, in which a heavier canvas was employed than in the other tents—a very judicious arrangement, the additional shade thus secured preserving the Ferns in excellent condition. In the open class for eight exotic species or varieties Mrs. E. Cole & Sons were adjudged first honours for beautiful examples of *Cyathea dealbata*, very large and elegant; *Gleichenia rupestris* and *G. Mendelli* in admirable condition; *Davallia Mooreana*, very handsome; and a fine *Thamnopteris australasica* with enormous fronds. Mr. Berry was a very close second, the plants in his collection being smaller but even, and as healthy as could be desired. *Adiantum cultratum*, over 5 feet in diameter, was especially notable; *Gymnogramma chrysophylla*, *Gleichenia speluncæ*, and *Davallia Mooreana* being also excellent. Capt. Hincks was third with small but fresh vigorous plants. The finest four specimens came from Mr. E. H. Letts, all in admirable form, *Davallia Mooreana* and *Pteris scaberula elegans* possessing considerable attractions. Mr. A. Scott was second with a neat collection, *Todea superba* and *Adiantum concinnum* being very compact and fresh. Mr. Alderman Walker took the third position, the most remarkable plant in the collection being a large *Adiantum formosum*.

Hardy species and varieties of Ferns were also represented by several handsome collections, one of the best being that from Mr. A. Scott, which was placed first in the class for twelve distinct forms. They were all delightfully fresh and robust, but exceptionally good examples of *Adiantum Capillus-Veneris*, *Athyrium Filix-femina*, varieties *polydactylum* and *corymbiferum* with a fine *Scolopendrium vulgare cristatum* being shown. Mr. C. Ryland was a good second, staging equally vigorous plants, but not quite so large; the handsome *Athyrium Filix-femina Fieldiæ* was particularly well represented. Mr. J. Rodwell, North East Cottage, Burton Lane, York, was third; and an extra prize was deservedly awarded to Mr. W. R. Robinson, Lowther Street, Groves, York, whose collection, though including some doubtfully hardy plants, was extremely even and meritorious. The last-named exhibitor was also first with six plants, neat and good, followed by Mr. A. Scott and Mr. J. Rodwell. The class provided for thirty-six distinct varieties of British Ferns in pots not exceeding 6 inches in diameter, was well filled, the prizes being taken by the following exhibitors in the order named:—Mr. J. Rodwell, Mr. A. Scott, Mr. W. R. Robinson, and an extra by Mr. R. Dutton, Lowther Street, York. All the collections were of good quality. Mr. Rodwell's included a fine selection of the most ornamental of the numerous forms.

Selaginellas.—Three good collections of six distinct *Selaginellas* were staged, the best being from Mr. Berry, and including *S. viticulosa*, *S. casia*, *S. Wildenovii*, and *S. Martensii* in beautiful form. Mr. Alderman Walker and Mr. A. Scott followed with well-grown specimens, an example of *S. apus* in the latter collection being noteworthy, but the plants were incorrectly labelled.

ALPINE AND HERBACEOUS PLANTS.—Two beautiful collections of twenty alpine and herbaceous plants were staged, the chief being secured by Mr. R. Simpson with an admirable selection. The following were especially noticeable in the group:—*Lupinus polyphyllus bicolor*, very strong and flowering most profusely; a great clump of the attractive *Saxifraga ceratophylla*; *Hemerocallis lutea*, fine; *Lilium umbellatum*; *Myosotis rupicola*, dwarf and pretty; *Polemonium coeruleum variegatum*, the variegated Jacob's Ladder; *Oenothera biennis*, bearing large clusters of its fine yellow flowers; *Campanula trachelium*; a grand mound of *Sibthorpia europæa*, and numerous *Pyrethrums*, *Lychnises*, and other attractive plants. Mr. J. Rodwell was second, also staging well-grown plants, examples of *Campanula glomerata*, *Viola Admiration*, *Delphinium nudicaule*, and *Saxifraga lantoscana* being the most notable.

Tuberous Begonias.—Three prizes were offered by Messrs. John Laing & Co., Forest Hill, London, for collections of the best, and newest forms of Tuberous Begonias. There were, however

only two competitors—Captain Darnell, Mount Villas, York (gardener, Mr. Rushton), and Mr. J. Key, Clifton Nurseries, York, who were first and second respectively. Those from the first-named were well grown and flowered, the blooms being of good size and richly coloured. Messrs. John Laing & Co. also exhibited specimens of their new seedling Tuberous Begonias, which were very attractive, and were highly commended by the Judges.

GROUPS OF PLANTS.—The central circular tent was devoted to the groups of plants, and five exhibitors competed for the prizes. The general quality of the plants was good, several handsome specimens being shown, but the taste displayed in the arrangement was not unusually excellent. Nearly all the groups were quadrangular in form, and this was not in accordance with the shape of the tent, consequently there was a somewhat abrupt and unsymmetrical appearance that was not by any means satisfactory. Last year in one of the large tents some much more effective groups were exhibited and attracted considerable admiration. At the Show we are now describing the most pleasing collection was from Mr. E. Letts, and the premier prize was awarded for it. It consisted principally of Palms, Ferns, Calceolarias, Crotons, and Coleuses very highly and tastefully arranged, and margined with small plants of *Adiantum cuneatum* and *Panicum variegatum* alternately. Mr. R. Simpson was second with a bright group, which contained a neat specimen *Bougainvillea glabra* and several good *Hydrangeas*. Mr. Berry followed with an even group of well-grown plants, and Mr. Alderman Walker was fourth with a bright but rather formal and crowded collection.

OUT FLOWERS.—These were exhibited in excellent condition, and the number of competitors in the different classes was also sufficiently numerous to render the display both extensive and bright. Roses were very fairly represented. The premier stands in the classes for forty-eight and thirty-six were shown by Mr. H. May, the collections including a number of excellent blooms and a selection of the best varieties. Mr. F. W. Tetley contributed good collections of twelve and eighteen, he and W. Allanby, Esq., Kirkby Overblow, Wetherby, taking the chief prizes in these classes. E. R. Whitwell, Esq., Barton Hall, Darlington, Colonel Brooshoof, and Messrs. Jackson & Co., were the principal exhibitors in the other classes. For twelve bunches of miscellaneous cut flowers J. W. Pease, Esq., M.P., Hutton Hall, Guisborough (gardener, Mr. McIndoe), was first with handsome examples of *Ericas*, *Ixoras*, *Bougainvilleas*, *Dracophyllums*, &c. Mrs. Cole & Sons followed with flowers of nearly equal merit. The awards for six bunches were obtained by A. Wilson, Esq., Tranby Croft, Anlaby, Hull (gardener, Mr. E. Woods), Captain Hincks, and Mr. Rylance, who staged bright collections of flowers. Bouquets and stands of flowers were well shown by Mr. G. Talbot, Mr. J. Rodwell, and Mr. Rylance, who obtained the principal prizes. The special prizes offered by Messrs. Backhouse & Son, Holgate Nurseries, York, for twenty bunches of flowers of hardy herbaceous plants were awarded to Mr. McIndoe and Mr. H. Banks, the former exhibitor staging a most attractive collection. Miss Steward, Mr. C. Rylance, and Mr. A. Simpson contributed very fine examples of *Zonal Pelargonium* blooms, and obtained the prizes in the order named.

MISCELLANEOUS EXHIBITS.—Among these the table plants were especially good, neat specimens being staged by Mr. A. J. Cholmley, Mr. Simpson, and R. Wyse, Esq., Auburn Hall, Malton (gardener, Mr. Wilkinson). Mr. W. Jackson, Cross Lanes Nursery, Bedale, had the premier prize offered by Messrs. Jackson & Co. for three *Yuccas*, showing handsome specimens. Only one good collection of *Azaleas* was exhibited—namely, the twelve small plants for which the chief prize was awarded from Mr. G. Talbot; they were very neat and well flowered. The Rev. G. E. Gardner contributed a fine group of *Gloxinias*, with handsome flowers of bright colours. Heaths were well exhibited by Mrs. Cole & Sons and Captain Hincks, and *Coleuses* by the first-named firm, Mr. Alderman Walker, Mr. J. T. Hingston, and Mr. R. Simpson, the plants being all fairly well grown and coloured.

FRUIT.—The exhibits in the numerous classes appropriated to fruit were both numerous and of considerable merit, the majority indicating very careful culture. In the chief class for a collection of twelve dishes Mr. McIndoe staged very handsome, even, well-finished fruits, and obtained the premier award. It included Black Hamburgs and Muscat of Alexandria Grapes, the former bunches of medium size but with good berries and well finished; the latter very fine, but apparently scarcely ripe. *Violette Hâtive* Nectarines, Bellegarde and Alexandra Noblesse Peaches were excellent both in size and colour; a good Smooth Cayenne Pine Apple, well-ripened Brown Turkey Figs, and a handsome Marcellus Melon were the most telling dishes in the collection. Mr. Clark, gardener to the Marquis of Ripon, Studley Royal, Ripon, followed with an excellent collection that was only inferior to the first in a few points. The Black Hamburg Grapes were remarkably fine, the other most noteworthy dishes being a handsome Blankney Hero Melon, finely netted, and large Dr. Hogg Peaches. For a collection of six varieties Mr. McIndoe was again in the principal position with similarly fine examples of culture to those in the large class. Mr. H. J. Clayton, gardener to J. Fielden, Esq., Grimston Park, Tadcaster, was second with very fine *Violette*

Hâtive Figs, Royal George Peaches, and large Muscat of Alexandria Grapes, but not fully ripe. Mr. Clark was third with very neat examples of Black Hamburg Grapes, Lord Napier Nectarines, and Castle Kennedy Figs. With a collection of four varieties Mr. McIndoe was followed by Mr. E. Woods, gardener to A. Wilson, Esq., and Mr. W. Wallis, gardener to Sir H. Meysey-Thompson, Bart., M.P., Kirby Hall, York, good fruits being exhibited in all the collections. Mr. Clayton had the finest Pine Apple; Mr. Letts and Mr. J. Miller, Silksworth Gardens, Sunderland, following.

Grapes.—These were shown in fine form generally, the Black varieties being the best. For a single dish of any black variety Mr. Wallis was first with handsome symmetrical bunches of Black Hamburg, the berries large and even, and the bloom excellent. Mr. McIndoe and Mr. Woods followed with the same variety, rather smaller, but well ripened. In the corresponding class for white varieties Mr. McIndoe obtained first and second honours with Buckland Sweetwater and Muscat of Alexandria, the former finely ripened. Mr. Wallis was also adjudged equal prizes for the same varieties similarly excellent. Mr. E. Woods was placed third with Buckland Sweetwater; and Mr. Allsop, gardener to Lord Hotham, Dalton Hall, Hull, received an extra prize for Foster's Seedling, finely grown, but scarcely ripe. For a single dish of any new variety Mr. McIndoe was first with Duke of Buccleuch, bunches of moderate size, but enormous berries and finely finished. Mr. Wallis took the second award for Royal Ascot, also with handsome berries.

Peaches and Nectarines.—There were six dishes of Peaches, and Mr. Wallis secured the chief prize with fine examples of Grosse Mignonne. Mr. Coleman, gardener to Earl Somers, Eastnor Castle, Ledbury, was second with same variety, nearly as good in quality. Mr. G. Parry, gardener to G. T. Leather, Esq., Leventhorpe Hall, Leeds, being third with smaller fruits, but well ripened. Mr. Coleman had the best dish of Nectarines—namely the variety Elruge, in fine form; Mr. G. Miles, gardener to Lord Carington, Wycombe Abbey, Bucks, and Mr. McIndoe taking the remaining prizes. There were also six exhibitors in this class.

Melons.—In the two classes for green and scarlet-fleshed varieties respectively there were thirteen entries, the exhibits being remarkably even in merit. Mr. Clark staged the best example of a scarlet-fleshed variety—viz., Royal Ascot, good in form and beautifully netted. Mr. McIndoe had very neat second prize Rosebery Topping; and Mr. W. Chuck, gardener to C. S. A. Thelissen, Esq., Bredsworth Hall, Doncaster, was third with a beautiful fruit of Turner's Scarlet Gem. Mr. Coleman was first with a green-fleshed variety, followed by Mr. Clark and Mr. M. Mann, gardener to Mrs. R. Hornsby, St. Vincent's, Grantham.

Figs, Cherries, and Strawberries were well shown by Messrs. Clark, McIndoe, Wallis, Church, and Letts, who obtained the chief prizes for good specimens. Cucumbers were very abundant and good, as many as twenty-five exhibits being entered in competition. The awards were obtained by W. Allenby, Esq., Mr. Kirk, Woodmansey, Selby, and Mr. Poad, Tulford Grange, York, both staging clean well-grown fruits.

The weather on the whole continued favourable throughout the three days of the Exhibition, and large numbers of persons visited the Show, thus rendering it highly successful in all respects.

THE FIG CROP.

AN abundant crop of Figs is now fast swelling upon trees trained to walls, both on east and south aspects. This is a welcome sight, for it is a favourite fruit, always valued as a choice addition to the dessert, and of especial importance this year from the almost total failure of the Peach and Nectarine crop upon open walls. This fact gives rise to the thought, Would it not be well to remove some of the Peach trees and to replace them with Figs? The foliage of some varieties of Peaches and Nectarines is so delicate when young that it invariably blisters from the chill contact of north-east wind, often to such an extent that the spring growth is quite crippled, and the crop of fruit rendered abortive. Now the Fig is never so affected, nor is it subject to disease of any kind. True, it is liable to suffer from severe cold in exposed situations, is apt to shed its fruit prematurely, and if suffered to make gross rank growth, barrenness is apt to ensue, for all which good culture is a sure corrective.

Briefly stated, good culture consists in planting in a sheltered yet open and sunny position in light, shallow, moderately rich soil, thoroughly drained, and to which additional fertility should always be imparted by top-dressings of manure rather than suffer the roots to ramble into deep soil. The roots of a Fig should be restricted equally with those of a Pomegranate, to induce abundant fertility. The fruit is most readily produced upon the two or three joints next the top of the shoots. Within certain limits the more young growth the more fruit holds good, and judicious and timely pinching secures all the fruiting wood we require. Some, in fact most, young trees

exhibit a decided tendency to make stout long-jointed growth, nor is it wise to check this too severely in the earlier stages of a tree's growth. Get your wall space covered, and the shortening of a few branches will then give you plenty of lateral growth. Systematic pinching is not desirable in very young trees, and precision of training is uncalled for in trees old or young.

No doubt some sorts of Fig will bear fruit much sooner than others. Thus a Brown Turkey will afford a dozen or two of fruit, while a Grizzly Bourjassotte or a Brunswick of the same age will only have a solitary fruit or two. Advancing age in a great measure corrects this; and while we value fully the great and early productiveness of that most useful of all hardy Figs Brown Turkey, we are content to wait for the huge luscious Brunswicks and the delicious-flavoured Bourjassottes which the teeming future has in store for us. White Marseilles may

be added to complete an excellent quartette for open walls. It is a stout fast-growing variety, and has a fine crop this year.—
EDWARD LUCKHURST.

A GOOD FRAME.

WHEN a frame is awarded a silver medal by the Royal Horticultural Society, it is certain that it possesses sterling merit. Novelty alone cannot command such a mark of approval, but the frame exhibited by Messrs. Foster & Pearson at South Kensington on June 8th combined novelty with utility in a remarkable manner. In addition to being strong, light, and durable, it was much approved for its portability, and especially for the new and admirable system of ventilation adopted. The ordinary toothed or perforated rod employed for elevating the lights is entirely dispensed with, and they are

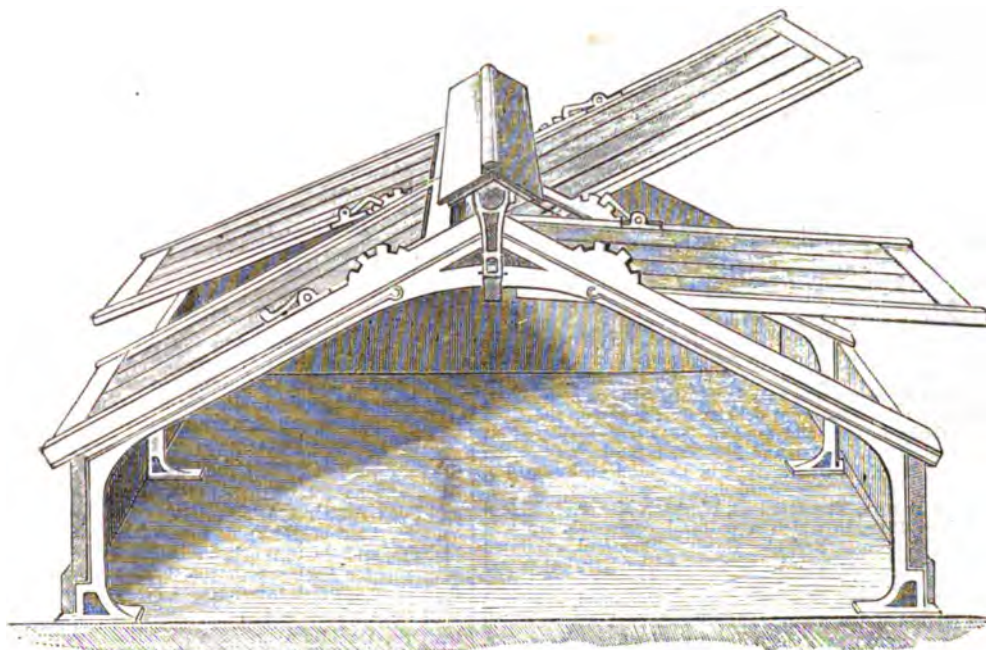


Fig. 71.—FOSTER & PEARSON'S FRAME.

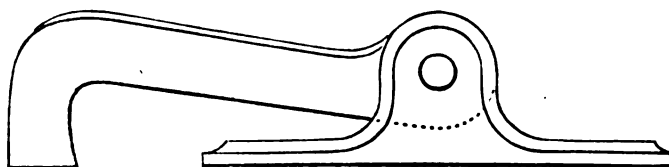


Fig. 72.—CATCH OF FRAME.

raised and secured in any desired position by a very simple and efficient contrivance—a contrivance resembling the segment of a cog wheel cast in the iron rafters, with a twisted "catch" on each light for holding it securely at any required angle. This catch is shown half size at fig. 72. The lights are also moveable, and can be placed off and on with the greatest ease. The roof ventilation is also excellent, and during wet weather the frame can be ventilated by the movement of a lever, which raises the cap, high or low, as is needed the whole length of the structure. The annexed engraving conveys a good idea of this useful frame, which we believe will be again exhibited at South Kensington next Tuesday. A great number were sold in the Gardens during the late show, and the frame is likely to become very popular, as it is unquestionably a serviceable garden appliance.

POLYANTHUSES.

I CANNOT allow the remarks of Mr. F. Boyes in a recent number to pass without stating, as I believe I have done be-

fore, that I have had several cases in my own garden of Polyanthuses raised by me changing to Primroses, and that has also occurred in one instance at least with regard to a Polyanthus purchased of a nurseryman. Now, it must be conceded that the nurseryman and myself could not have been deceived as to the nature of the flower. If Primroses had been sent they would, of course, have been returned; besides, why should Mr. Boyes be so sceptical as to "a pure and true Primrose being produced from a properly labelled Polyanthus," when Mr. C. W. Dod says, page 336 of the Journal, "There are also many established varieties of the garden Primrose which often run into the Polyanthus habit and produce trusses, especially a dark purple double variety, which flowers in trusses as often as singly?" Perhaps Mr. Boyes may say, "Oh, yes; it is true some of these flowers do change; but once a Polyanthus always a Polyanthus, whether the flowers have any footstalks or not." Now, I do not concur in this. When a Polyanthus changes its mode of flowering so that it cannot be distinguished from a Primrose by any ordinary individual or a botanist either, it should be called a Primrose; to do other-

wise would, I fear, only create endless confusion in the classification of plants.—*AMATEUR, Cirencester.*

P.S.—In my letter on "Gardening in India," on page 473, your printer has put "watching the trees twice a day" instead of watering.

ROYAL HORTICULTURAL SOCIETY.

JUNE 22ND.

THE meeting held on the above date was not distinguished by a great display, the entries being comparatively few. Collections of new plants formed the principal feature, several being especially attractive.

FRUIT COMMITTEE.—Henry Webb, Esq., in the chair. Mr. Carmichael, gardener to H. P. Oakes, Esq., Newton Court, Bury St. Edmunds, sent fruit of a seedling Cucumber called Silvio, but as the fruit was too old and had been cut for some time a favourable opinion could not be expressed upon it, and the Committee hoped to see it again. Mr. H. Thetford, Victoria Nursery, Forest Hill, sent a brace of handsome Cucumbers called Thetford's Champion, somewhat in the way of Telegraph but larger and coarser. It was not considered superior to others in cultivation. Mr. R. Dean, Ealing, sent two plants of Early Cluster Potato, said to have been raised from Porter's Excelsior and Early Market, and grown in 8-inch pots. It is a round Potato with foliage resembling some of the American varieties. The Committee were of opinion that it was a promising early variety, but before giving it an award suggested it be sent to Chiswick to be tried along with other varieties. Mr. Woodbridge, The Gardens, Syon House, exhibited a dish of Early Cluster Tomato, a small oblong red Tomato, which showed great fertility. The fruit was rather pasty in its texture and was rather deficient of acidity. A letter of thanks was awarded. Mr. Dean sent some plants of Peas grown in pots, to which a letter of thanks was awarded.

Messrs. James Veitch & Son exhibited dishes of Sturmer Pippin and Golden Noble Apples, grown and brought home by Mr. Marriott of Campbell's Creek Nursery, Castleman, Victoria, Australia. The specimen was very handsome in form and colour, and the Sturmer Pippins were deliciously flavoured, the flesh being particularly delicate and tender. They were gathered on April 24th, packed on May 1st, and brought home by way of the Red Sea by Mr. Marriott, who arrived in England on June 16th. A cultural commendation was awarded.

Mr. Thomas Sutton, The Gardens, Workop Manor, exhibited a Black Prince Pine, to which a cultural commendation was awarded. Mr. R. Gilbert, Burghley Gardens, Stamford, exhibited Gilbert's King of Melons, a fine green-fleshed variety, but it was much over-ripe and disagreeable in flavour. Mr. James Hopkins, gardener to R. Thornton, Esq., High Cross, Framfield, exhibited High Cross Hybrid Melon, a handsome green-fleshed variety, which unfortunately was not ripe, though it promised a fine flavour. Mr. A. Hopkins, gardener to R. Johnson, Esq., Remnal Manor, Chislehurst, sent Omant's Favourite Melon, the flavour of which was not agreeable.

FLORAL COMMITTEE.—Dr. Denny in the chair. Several collections of new and beautiful plants were staged, Pelargoniums being numerous. Messrs. Veitch's group was very attractive, and in addition to the certificates which were awarded a cultural commendation was adjudged for two good specimens of the pretty Campanulaceous plant *Platycodon grandiflora*, flowering very freely. Of the Pelargoniums those from Mr. G. Braid, Winchmore Hill, and Mons. V. Lemoine, 67, Rue de l'Etang, Nancy, were particularly attractive. A collection of Zonals from Mr. P. Fry, Addington, Maidstone, supposed to be hybrids between *Geranium pratense* and several Zonal varieties, also received much attention. They were stated to be perpetually flowering forms, but the peculiar large distorted trusses produced rendered them more strange than ornamental. Messrs. Hooper & Co., Covent Garden, were awarded a vote of thanks for specimens of the so-called "Resurrection Plant," *Selaginella lepidophylla*, dried plants of which expand when placed in water. Mr. Aldous, Gloucester Road, staged a group of miscellaneous plants in the conservatory.

The following exhibitors were awarded first-class certificates for the plants described:—Messrs. J. Veitch & Sons: *Asparagus plumosus nanus*, a dwarf form of that beautiful species with similarly elegant leaves, but only about 6 or 8 inches in height; *Pteris serrulata cristata bella*, a form of this well-known Fern, in which the terminal crest is very finely and elegantly divided, the general habit also being graceful; *Erythrina marmorata*, an attractive plant, with finely variegated foliage. Mr. W. Bull, Chelsea: *Lilium nitidum*, a distinct and pretty Lily, with small orange-coloured spotted flowers resembling *L. parvum*, but differing from that in the bulbs. Messrs. Hooper & Co.: *Canna Ehemanni*, a showy plant with large rosy crimson flowers, in the way of *C. iridiflora*. Mr. V. Lemoine: *Pelargonium Madame Thibaut*, a handsome Show variety, with semi-double flowers of a bright purplish tinge margined with white, and also an unnamed seedling with white flowers marked with a dark blotch in the centre of each petal;

Fuchsia Madame Galli Marie, a floriferous double variety with large flowers, the corolla white, and the calyx rich scarlet. Mr. G. Braid: *Pelargonium Zulu Belle*, one of the "decorative" section, of compact habit, bearing neat trusses of symmetrical flowers, white, with a deep purple blotch in the centre of each petal. Mr. C. Turner, Slough: *White Pink*, *Mrs. Sinkins*, an extremely fragrant and floriferous variety, with blooms of great size and fine form. J. McIntosh, Esq., Duneevan, Oatlands Park, Weybridge (gardener, Mr. Taylor): *Lilium polyphyllum*, a rare species, with flowers of moderate size, of a somewhat creamy tint, spotted and streaked inside with purple. Two Ivy-leaved Pelargoniums from the Society's Garden at Chiswick were also certificated—namely, *Gloire d'Orleans* and *Mons. Dubus*, both of M. Lemoine's raising. They were very compact in habit, with neat trusses of pink flowers, those of the latter being of a lighter tint.

SCIENTIFIC COMMITTEE.—The Australian bug on Blackwood, *Acacia melanoxylon*, referred to Mr. McLachlan, was forwarded to Dr. Signoret of Paris, who reports that it is a species of *Pulvinaria*, the same genus as the *Pou à poche blanche* of the sugar of Mauritius. Peach blossom, referred to Dr. Masters, proved to be remarkable for being borne on this year's wood, in the thickness of all its parts, and lastly in producing two carpels. Mr. J. Wilson of St. Andrews forwarded the caterpillar of a sawfly feeding on *Lastrea dilatata*; also shoots of *Vaccinium Vitis-Idæa* attacked by a fungus, referred to Mr. Smith; and specimens of *Æcidium viola*. A *Lilium* named nitidum, by Mr. Bull, was remarkable for its foliage, being that of *L. Humboldtii*, but its bulb resembling that of *L. Washingtonianum*—from California. The following additions were made to the Lindley library:—"Index Perfectus ad Caroli Linnei Species," F. de Mueller, Melbourne, 1880. "The British Moss Flora," Part I., Andreaeae. By R. Braithwaite, M.D.

NOTES AND GLEANINGS.

At a general meeting of the ROYAL HORTICULTURAL SOCIETY, held on Tuesday last, William Houghton, Esq., in the chair, the following candidates were duly elected Fellows—viz., Finlay Campbell, Miss Gunnis, Charles Cyril Hicks, M.D., George Moffatt, and Mrs. Thomas.

—At the ROYAL BOTANIC SOCIETY'S SHOW last week the following exhibitors were awarded first-class botanical certificates for the new plants mentioned. Messrs. James Veitch and Sons for *Croton Nevilliae*, *Lælia Philbrickiana*, *Pinanga Veitchii*, *Acer polymorphum septemlobum elegans*, *Pteris Moluccana*, and *Quercus crispata argenteo-variegata*. Mr. B. S. Williams for *Asplenium Baptisti*, *Nepenthes compacta*, *Croton Rodeckiana*, *Pteris internata*, and *Cypripedium robusta*. Mr. W. Bull for *Anthurium insigne*, *Ceratostylis fusco-viridis*, *Croton insignis*, *Oncidium crispum grandiflorum*, *Dieffenbachia rex*, *Lilium nitidum*, *Adiantum aneitense*, and *Selaginella involvens variegata*. Messrs. E. G. Henderson & Son for *Freesia odorata*, *Crinum petiolatum*, and *Quercus cuspidata argenteo-variegata*. Floricultural certificates were adjudged to Mr. Turner, Slough, for *Fancy Pelargonium Sarah Bernhardt*, and a Show Pelargonium, *Martial*, to E. B. Foster, Esq., Clewer Manor, for Show Pelargoniums *Emperor William*, *Alice*, and *Minotaur*; to the Rev. A. Matthews, Gumley, Market Harborough, for Show Pelargonium *Russell*; to Messrs. J. Veitch & Sons for *Coleuses Pharo* and *Acme*; to Messrs. J. Peed & Sons for Pelargonium *Duchess of Connaught*; to Mr. Chambers, Westlake Nursery, Isleworth, for *Lobelia magnifica alba*; to Messrs. E. G. Henderson & Sons for *Begonias Comtesse de Thellussen* and *argenteo-zebrina*; to Messrs. Osborn & Sons for *Begonia Madame Triquaneaux*; to Mr. W. Bull for *Cereus C. M. Hovey*; and Mr. B. S. Williams for *Coleus Mrs. G. Simpson*. We also omitted to record in our report that Mr. J. R. Stirling, gardener to H. H. Vivian, Esq., M.P., Park Wern, Swansea, was first with a single Queen Pine Apple; and Mr. J. Muir, gardener to C. M. R. Talbot, Esq., Margam Park, occupied a similar position in the class for Any other variety with a fine Smooth Cayenne, one of the few really good fruits shown.

—WE are requested to mention that the Exhibition of the PELARGONIUM SOCIETY for 1880 will take place on June 29th in the gardens of the Royal Horticultural Society, in conjunction with the Rose Show of that Society. The prizes in the several classes amounting to £141 15s. are open to competition amongst members only (the qualification being a subscription of £1 1s. per annum); but seedlings may be shown for the Society's certificate both by members and non-members on giving the notice required by the schedule, and filling up the descriptive forms provided for that purpose. Seedlings may also be shown for these certificates at the Royal Horti-

cultural Society's Meeting on July 13th. Both the schedule of prizes and the blank forms for the entry of seedlings can be had on application to Mr. Moore, Botanic Gardens, Chelsea, London, S.W., the Society's Honorary Secretary. We are also desired to remind our readers that Mr. Shirley Hibberd will, on the occasion of the above Exhibition, deliver a lecture on Pelargoniums in the Council-room at 3 P.M.

— We have received from Mr. Stephen Castle, the Vineyard, West Lynn, Norfolk, as good a specimen of a DOUBLE CUCUMBER as ever came under our observation. The two fruits are joined together by a very slender integument; they are of good form and size, and of excellent quality.

— A CORRESPONDENT writing to us on the VEGETABLE CROPS in Bedfordshire, states that all except Ridge Cucumbers are looking well, but unless they have more sun and less rain Peas will make a second growth, which is not favourable to the production of seed, and the growers of Cucumbers will again be great sufferers. Many of the plants which started nearly a month since have gone off from cold and stagnation, and seed is again being sown.

— No opportunity should be lost to destroy every WASP now, as they will soon be devoting all their time and attention to the interior arrangement of their nests, when the small working wasps will be abroad. Mr. J. Hiam says he has killed more than a hundred (which represents a hundred nests destroyed) while hovering along the side of a garden hedge. The first nest was taken to him on June 1st, consisting of one small comb the size of a shilling, and containing thirty-six cells with larvae. Our correspondent writes from The Wren's Nest, Aatwood Bank.

— As affording some evidence of the decline in the fashion of dotting BEDS ON LAWNS in the immediate vicinity of mansions, we have during the past week observed that such beds have been turfed over in three important gardens that we have visited, and the grounds are considered to be more imposing by the change. In each instance such plants as Pelargoniums, &c., are still grown, but in less prominent positions, and hardy flowers are also being grown in larger numbers than previously. It is not, however, anticipated that bedding plants will be exterminated, and it is very undesirable that they should be, as no flowers can impart such brightness to a garden during the late summer and early autumn months. For certain positions, purposes, and periods, "bedding plants" are peculiarly adapted, but it is unlikely that they will monopolise the space in the flower beds and borders in future as they have done during the last quarter of a century; they will rather share it, as they may reasonably do, with more hardy yet not less beautiful flowers, for there is room for all.

— We observe in Covent Garden Market many plants of the free-flowering white ROSE MADAME PLANTIER. The plants are in 5-inch pots, each bearing a profusion of flowers of great purity. We know of no white Rose that will produce such a number of flowers at the same time as this. For decorative purposes and for affording a supply of small flowers for bouquets and vases this distinct old variety is worthy of cultivation. It is also a good forcer, and we saw several plants of it flowering in Messrs. Veitch's nursery at Coombe Wood about three months ago, but for flowering in pots during May and early June it is especially valuable, and should be much more extensively grown for this purpose in private gardens than it is at present. It succeeds well both on its own roots and on the Briar and Manetti stocks.

— AUBRIETIA DELTOIDEA.—Many of the borders in the beautiful gardens at Marfield, near this town, are tastefully edged with this fine spring-flowering edging plant. It possesses none of the defects of Box, Grass, &c., requires little care, does not harbour slugs or vermin, and looks handsome at all times, while the colour is most agreeable to the eye. The Hon. Mrs. Bagwell, with very great taste, sometimes employs it for massing or rockeries, and it always looks effective.—W. J. M., *Clonmel*.

— It is announced in *Nature* that "a large GERMAN HORTICULTURAL EXHIBITION is planned for the summer of 1892. It will be held at Bremen in connection with the twenty-fifth anniversary of the foundation of the Horticultural Society of that city."

— UNDER the heading of RHODODENDRON DUCHESS OF BUCCLEUCH the *Gardener* observes—"It is much to be regretted that greenhouse Rhododendrons—i.e., the varieties that hail from Sikkim, Java, China, and Bhotan, and the

splendid hybrids which have been raised from these in this country—are not more generally met with as decorative greenhouse plants. The Duchess of Buccleuch was raised, we believe, or at all events sent out, some years ago by Messrs. Methven & Sons—is not so well known as it deserves. Anyone who once sees the pure white flowers of great substance and size, one of which is sufficient to suffuse with delicious perfume a whole house, is not likely to forget it or neglect to grow it. If this plant has a drawback it is in its rather loose habit of growth. But this can in part be counteracted by under instead of over-potting, and the use of the knife after it has bloomed. It would be a first-rate subject on the back wall of a greenhouse or conservatory, where there is plenty of light. This, like all these fine greenhouse Rhododendrons, thrives best in pure turfy peat, with about a sixth of the whole of sand, or very much the same compost as is used for Indian Azaleas."

— MR. SADLER, the Honorary Secretary of the HORSHAM ROSE SHOW, requests us to state that the Exhibition is postponed to the 7th of July.

— THE following GARDENING APPOINTMENTS have been recently made:—Mr. W. Phillips, late foreman at Lord Waverney's, Flixton Hall, succeeds Mr. Dell as gardener to the Earl of Dartmouth, Patehall; Mr. R. Pritchard succeeds Mr. Christie as gardener to H. Woods, Esq., Warnford Park, Bishop's Waltham; Mr. T. Lloyd succeeds Mr. Johns as gardener to Mrs. W. Hemming, Spring Grove, Bewdley; Mr. T. Knowles has been appointed gardener to H. L. Antrobus, Esq., Cheam House, Cheam; Mr. J. Macdougall succeeds Mr. Titcher as gardener to W. Terry, Esq., Peterborough House, Fulham. Mr. G. Duncan succeeds Mr. Morley (deceased) as gardener to E. T. Lucas, Esq., Warnham Court, Horsham; Mr. T. East succeeds Mr. Hill as gardener to R. Valpy, Esq., Champneys, Tring; and Mr. C. Milner succeeds Mr. Bolloom as gardener to R. L. Newall, Esq., Ferndean, Gateshead-on-Tyne.

BLAIR ATHOLL GARDENS.

THE gardens attached to Blair Castle, the seat of His Grace the Duke of Atholl, K.T., are about 11 acres in extent, but 3 acres are submerged in water and form a beautiful lake, stretching across the garden. In this there are numerous islands, on which have been planted Spruces, Weeping Birches, Willows, Yews, and Laurels. One peninsula-like promontory is very beautiful. It is elliptical in form, and surrounded by a Yew hedge 3 feet high; within this is a flower garden, the beds and walks being edged with white stones. The arrangement is very tasteful, and is seen to advantage from an eminence overlooking the gardens. On the north side of the garden is a walk about 600 yards long, and stretching from the walk to the boundary wall along one side of it seven Yew hedges have been planted at equal intervals. The view obtained from one end of the walk is very striking.

The hothouses consist of a conservatory, a vinery, a Peach house, and a stove. The three former are of lean-to construction, but the stove is span-roofed. Amongst the plants in this department are some handsome Dracenas and Palms for table decoration. The conservatory is about 25 feet high, and on the top stage are arranged two rows of Fuchsias, each specimen 10 feet high and bearing a profusion of blooms. On the wall is an old plant of *Solanum jasminoides*, which nearly covers the roof. The Vines are in fine condition and bearing a heavy crop. The Peaches are also healthy, and have a large number of fruit. Two beautiful specimens of *Araucaria excelsa* 5½ feet in height are very attractive. The garden is in a very flourishing condition, and reflects great credit upon Mr. Smith, who has been Superintendent for more than forty years.—D. B.

THE PRIMROSE AND POLYANTHUS.

THERE has lately been considerable correspondence in the pages of this Journal on the Primrose, Cowslip, and Oxlip, and the relationship that subsists between them and the Polyanthus. Some years ago I communicated a series of articles on this subject, and stated what seemed to me to be their individual characteristics. The opinions I then expressed appeared at the time to have been accepted, as there were no other views brought forward controverting them. The subject appears, however, to have been forgotten, and there have lately been views expressed which indicate doubt and justify the belief that very uncertain ideas exist as to the true characteristics of these plants.

Even botanists are not quite clear on the subject, some being

doubtful as to there being any proper specific distinction between a Primrose and a Cowslip. Some botanists of high repute consider that they are merely forms of one and the same species, and that the Oxlip is produced by intercrossing them.

After many years' observation of these plants, and a rather extensive experience in cultivating them, I have come to the conclusion that all three are perfectly distinct, and that each will reproduce its own individual form. I never knew, as some allege they have, a Primrose become a Cowslip, or a Cowslip

become a Primrose. The characters which distinguish each are so decided as to render such a thing improbable, and the umbellate form of the common Primrose, which is described in books under the name of *P. acaulis* var. *caulescens*, is really the true Oxlip. For the benefit of those who are unaware of what these characters are I will supply them with the information.

THE PRIMROSE (*Primula vulgaris*, Huds. ; *P. acaulis*, Jacq. ; *P. veris* γ *acaulis*, Linn.), fig. 73.—The flowers of the Primrose



Fig. 73.—THE PRIMROSE.

are solitary, on long, hairy, radical peduncles, issuing from the axils of the leaves, and rarely from the axis of the rhizome as some authors say they do. Calyx cylindrical, contracted in the middle, closely embracing the tube of the corolla with long lanceolate acuminate teeth, green, with darker green ribs. Corolla flat, salver-shaped, with five, six, or seven, notched, obovate segments, which generally, though not always, overlap each other; pale yellow, with a yellow star round the throat, the rays of which correspond in number with the segments of the corolla. Leaves evergreen, smooth above, hairy beneath,

oblong obovate, with a decurrent blade, and a footstalk winged to the base. The habitat is in woods, copses, hedgerows, and moist shady places. It flowers continuously from March till May, and in mild seasons may be seen frequently in bloom all the winter.

THE COWSLIP (*Primula veris*, Linn. ; *P. officinalis*, Jacq.), fig. 74.—Flowers numerous, in the form of an umbel, on a tall scape issuing from the centre of a rosette of leaves, which, with the peduncles, is nearly smooth, or slightly powdered with fine down. Calyx inflated, shorter than the tube of the corolla,

with short blunt teeth; pale yellow or greenish; yellow. Corolla concave or cupped, with five obcordate notched segments, the edges of which are convergent; deep yellow, with five deep orange-coloured lines, forming a bright five-rayed star round the throat. Leaves deciduous, ovate or oblong, with a naked or partially winged footstalk; the blade downy above, villous beneath, terminating abruptly.

The Cowslip is found in meadows, pastures, and more generally in open spaces than the Primrose, and it flowers in the

end of April and throughout May. I am not aware that Cowslips are ever seen in bloom in the winter or early in spring, like the Primrose, in a state of nature.

These characters, one would imagine, are sufficiently distinct, and I cannot think why Linnæus considered the Primrose as only a variety of the Cowslip, for the difference is so well marked as to constitute the two plants as good species as are to be found in the *Species Plantarum*.

To aid the descriptions and to make the subject more clear



Fig. 74.—THE COWSLIP.

to your readers I send you the accompanying illustrations of a Primrose and a Cowslip, and I shall next week continue the subject, illustrating the Oxlip and the various forms of the Polyanthus.—PHILANTHOS.

(To be continued.)

ROSE PROSPECTS.

I WAS very sorry to read in the Journal such discouraging accounts of Roses from different parts of the country, but I was

not by any means surprised; indeed, I felt sure, from a careful examination of my own plants when pruning, that numbers of them were much more injured than was apparent from outward appearance.

It will perhaps be remembered by some of your readers that when I had a discussion in the Journal some time ago (Jan. 15th, p. 45) with Mr. Wm. Paul on Roses injured by frost, I pointed out that though a great many shoots appeared green and healthy and apparently uninjured, they were in reality frozen at the snow-line, and would be almost sure to die down

to that point. In reading the letters of your correspondents I am impressed with the idea that this is just what has happened with some of them. They have not when pruning cut the shoots below this spot, but have left them too long—that is, have left on some portions of the branches above this frostbitten part; in which case, though the portion of wood above it would throw out leaves and seem healthy for a time, it would eventually die. I entirely endorse the Editors' opinion on this, and in confirmation of it I may say I left some of these shoots on the trees for experiment, and they acted precisely as I have stated and exactly as I anticipated. A number of shoots were also cut off at the point where frozen, and were simply stuck into the ground for trial, and these produced leaves and seemed to be growing as healthily as the parent plants, so that anyone who did not know would have thought they had roots. Of course they afterwards died. An analogous case may be cited in the cuttings of Roses, which often produce leaves and seem perfectly healthy for a time, when they suddenly die. The reason of this is, they have been living on the protoplasm of the shoot, which has been gradually absorbed, and there being no roots to afford a fresh supply they were bound to perish. There may have been other causes that have conducted to the unhealthiness of some of your correspondents' Rose trees, but undoubtedly the primary one is injury by frost on unripened wood. It will perhaps be asking your readers too much to read over my letter of the 15th Jan. last, but those who care to do so will find the debilitated and unsatisfactory state of their Rose trees anticipated.

Now, as to my own Rose trees. I cut all the old plants down to the ground, or at least below where injured by frost, and I have never known them look so well. The foliage has all along borne a most healthy appearance, and the young shoots have been and are strong and vigorous. Neither the spring frosts nor the cold N.E. winds seem to have had the slightest effect on them; but there is one respect in which they are unsatisfactory—they are forming plenty of wood but very few blooms, a consequence of overpruning, which, however, could not be avoided.

Unfortunately I did not have my new plants put in until February. I was afraid many of them would never survive. What with the cold dry weather and the grubs they have had a sorry time of it, and some of them have departed, but now we have had fine rains and a warm day or two I am hoping they will come on. The maidens are better than I expected. The constant wet all the budding season, and having to use at times unripe buds, made me anticipate much failures, which anticipation I am pleased to say has not been realised.

Roses are late here. I have not seen a bloom yet except old Gloire on walls, and I fear there will be a scarcity of early blooms.—F. BOYES.

CHERTSEY AND DISTRICT HORTICULTURAL SOCIETY.—JUNE 17TH.

DISTRICT horticultural societies undoubtedly conduce to superior cultivation, and consequently gardeners become more competent by the stimulus they receive by mutual emulation, and their services are of the more value to their employers. The resident gentry in the district in question appear to recognise this, for a great number contribute to the funds of the Society, which is thus not entirely dependant on gate money. This is fortunate, as on Thursday last, the day of the Show, the rain fell in torrents before the judging was completed, and consequently deterred many visitors from enjoying a display that was highly worthy of their patronage.

The Show was held in Ashley Park, Walton-on-Thames, the finely-timbered demesne of Mrs. Sassoon. The chief collections of plants were arranged in a very large marquee, three smaller tents accommodating the group of plants, fruit, vegetables, and cut flowers and cottagers' productions. We can only notice the principal exhibits. Ferns and fine-foliaged plants predominated. At the entrance of the chief tent a charming collection of plants from Messrs. Jackson & Son of Kingston attracted much attention, and reflected credit on their skilled grower Mr. Puttick. Mr. Cornhill, gardener to E. Petit, Esq., Oatlands Park, staged many fine specimens, and secured the first prize for six exotic Ferns with a *Dicksonia*, an *Alsophila*, a *Gleichenia*, *Blechnum brasiliense*, *Cibotium Schiedel*, and *Platycerium grande*, all in excellent condition; Mr. Gubbins, gardener to Sir William Drake, being an excellent second. Mr. Cornhill was in the premier position in the class for six fine-foliaged plants with *Seafortia elegans*, *Croton interruptus*, *C. majesticus*, *Cocos Weddelliana*, in fine condition; *Bonaparteia juncea*, and a *Dicksonia*; he was also in the same position with six stove and greenhouse plants in flower, with remarkably fresh specimens of *Bougainvillea glabra*, densely flowered; *Genetyllis tulipifera*, with superior blooms; *Erica ventricosa coccinea*, and *E. v. magnifica*, in excellent con-

dition; *Aphelexis macrantha rubra*, and the finest example we have seen of *Begonia Weltoniensis*. Mr. Polley, gardener to H. Rogers, Esq., Oatlands Park, followed rather closely, his best plants being *Anthurium Schertzerianum* and *Erica Cavendishiana*, both good. This exhibitor had the chief prize for *Dracenas*, followed by Mr. Cornhill, both exhibiting well, and second with six fine-foliaged plants; his collection including a grandly coloured specimen of *Croton variegatus*. Mr. Povey, gardener to A. Gillespie, Esq., Oatlands Park, was very successful, being first in the class for four stove and greenhouse plants with *Statice profusa*, good; *Rhynchospermum jasminoides*, in fine condition; a *Clerodendron*, and a *Kalosanthes*. He had a similar position with eight plants, his noticeable example being *Hæmanthus puniceus*, with half a dozen large heads. He was first also with four fine-foliaged plants, and with four *Caladiums* in superb condition, the varieties being *Chantini*, *Prince Albert*, *Meyerbeer*, and *Houletti*, the first two named having grand foliage 18 inches in diameter; Mr. Polley's second-prize quartett was also fine, the variety named "Excellent" being all that the name implies. Mr. Gray, gardener to Dr. H. Bennett, Weybridge, was the chief winner in the class for four *Palms* with large specimens. Mr. Taylor, gardener to James McIntosh, Esq., had a similar position with *Liliums*, *L. Hansonii* being splendid, the two examples containing nearly a hundred bright waxy flowers; *L. parvum*, *L. purpureum*, *L. umbellatum* var. *Sappho*, and a new crimson variety of *L. Thunbergianum* completing the group. *Fuchsias* were very well shown by Messrs. Cornhill and Povey, both staging large informal pyramids. There was great room for improvement in the *Polargonium* classes in all the sections of these plants. *Gloxinias* were splendid, better examples of culture seldom being seen than those of Mr. Cornhill and Mr. Taylor, who had the chief prizes. Table plants were neat and good, Mr. Povey winning first position. Ferns were numerous and in excellent condition; Mr. Smith, gardener to Archdeacon Jennings, Chertsey; Mr. Millican, gardener to Mrs. Cobbett; Mr. Dibbins, gardener to W. Hinds, Esq., Byfleet; Mr. Russell, gardener to J. R. Wilson, Esq.; Mr. Polley, and Mr. Gray being the principal exhibitors. Mr. Tipping, gardener to L. Smith, Esq., Walton, staged fresh, bright, and good *Tuberous Begonias*; and Mr. Lloyd, Brookwood, showed effective plants of a fine orange scarlet variety.

The groups of plants were much admired. The schedule was commendably clear, so that the competitors knew with what plants the space could be best occupied, the stipulation being, "Best group of plants arranged for effect on the ground on a half-circle, 10 feet by 5 feet," the prizes in this class being offered by the President of the Society, G. F. Wilson, Esq. Prizes were also offered for half-circular groups, 7 feet by 14 feet. These large and small groups were alternately arranged around a tent with sufficient space between them for examination, the centre of the tent being unoccupied. The plan was in every way a success. The prizes for the large groups went respectively to Mr. Cornhill, Mr. Povey, Mr. Gubbins, and Mr. Polley. Mr. Cornhill's group combined brightness with elegance in a remarkable manner. The taller plants included *Grevilleas*, *Palms*, *Dracenas*, with an undergrowth of *Spiræas*. The front was composed chiefly of very fine *Gloxinias*, which alternated with Ferns and Harrison's Giant Musk. New *Coleuses* were conspicuous rising above the dwarfier plants, as also were small well-coloured specimens of *Pandanus Veitchii*, *Canterbury Bells*, *Tuberous Begonias*, and *Agapanthus*. The group was neither flat, formal, nor crowded, while all the pots were hidden, and was altogether a good example of tasteful arrangement. The other groups were of pretty equal merit, and the best appeared to have been made with the plants at each exhibitor's disposal. Mr. Millican was placed first in the smaller class with a light and elegant arrangement, and the other prize-takers, Messrs. Russell and Tipping, had attractive collections. In Mr. Russell's group a yellow *Chrysanthemum* was flowering as freshly as in autumn.

Cut flowers were not numerous, Mr. Povey being in the first position in the class for twelve distinct varieties with an excellent stand, in which the rare Orchid *Epidendrum bicoloratum* was well represented. The date was too early for Roses, but a few boxes were exhibited, Mr. Lloyd staging the best blooms. Mr. Millican, Mr. Plowman, and Mr. Taylor were awarded the prizes for drawing-room ornament. The top of Mr. Taylor's stand was exquisitely furnished, and had not the base been faulty, the dish being quite visible, it must have won the first position.

Fruit was rather limited, Grapes being generally small but well finished, Mr. Russell being the most successful exhibitor. Peaches and Nectarines were excellent, especially those from Mr. Cornhill. Melons, except the prize fruits of Messrs. Millican (Read's Scarlet) and Taylor (Turner's Scarlet Gem), were not in good condition; and Mr. Taylor staged much the best Strawberries—British Queen.

The collections of vegetables from Messrs. Cornhill, Taylor, Gubbins, Polley, and Millican were excellent, as also were the Cucumbers, the prizes being awarded to the good exhibition variety Tender and True. Mr. Clarke, Twickenham, exhibited Excelsior mowing machines which were highly commended by the Judges.

This, one of the best of district exhibitions, was admirably

managed, as also is the Society generally, which is fortunate in having many excellent gardeners on the Committee, and an efficient Secretary in Mr. Rawlings.

LILIES.—No. 2.

IN continuation of my remarks on page 373, I have selected the following species and varieties as deserving of being added to those already enumerated:—

Lilium Scortchianum.—A lovely Asiatic Lily. It grows about 3 feet high, the stems bearing sometimes as many as ten flowers, which vary in colour, but are usually of a bright citron yellow colour spotted with black, the segments gracefully recurved, with a very powerful odour. It is most easily cultivated, and whether grown in pots or borders it is remarkably handsome, in fact it is one of the most ornamental.

L. superbum.—This is from California. It forms a very noble plant, with stems 5 or 6 feet high, bearing from ten to fifteen flowers at the top. In extraordinary strong specimens as many as twenty flowers have been produced of a bright orange colour usually, copiously spotted with crimson-purple, although it varies considerably. This is one of the swamp-loving species in a native state, so it requires peat and sand in a damp position.

L. testaceum.—A Japanese species according to some authorities, while others regard it as a hybrid. It grows from 4 to 5 feet high, producing several drooping flowers, which are of a rich apricot colour, with the perianth divisions sharply recurved, and with a delicious fragrance. It is a charming plant and may be easily managed.

L. tenuifolium.—The smallest Lily I know. The slender stems grow about 1½ foot high, bearing several deep scarlet-crimson flowers, with the segments very sharply reflexed, the flowers being like little balls about 2 inches or less across. This requires a well-drained position, and a good supply of peat with the loam. It flowers during June and July, and is a native of Siberia.

L. Thunbergianum.—This species, which comes from Japan, presents such a variety of beautiful forms that it is difficult to distinguish a type. For our purpose a few remarks on some of the best varieties will do. *Alutaceum* grows about a foot high, producing large, erect, glowing apricot-coloured flowers, spotted with black; one of the best. *Armenicum*, rather taller-growing than the last; flowers trumpet-shaped, of a rich reddish-orange; it is the latest variety to flower. *Staminosum* (double form), about 18 inches high, producing several large double flowers of a deep crimson colour, lasting a long time in beauty. *Fulgens*, same height as the last, with large flowers of a deep crimson tinged with orange, spotless, very beautiful. *Sanguineum* produces very fine flowers of a reddish-crimson colour, shaded with dullish yellow, rendering it a very conspicuous variety. They are the dwarfiest of all Lilies, and they are well adapted either for beds or pots. It is a good plan to grow them in pots, and plunge them in beds with other plants, where they present a striking appearance, and last a long time. They flourish well in almost any kind of garden soil.

L. tigrinum.—Commonly known as the Tiger Lily. This has been known in our gardens for a considerable time. The originally introduced form from China, known as *sinensis*, is the one usually seen. There are, however, other varieties easily obtainable, which are even of a more decorative character than that variety. *Japonicum* is taller than *sinensis*, and flowers rather later; flowers orange scarlet, freely spotted. *Erectum* is very beautiful, and growing about 3 feet high, producing erect flowers, bright orange scarlet, sparingly spotted. *Fortunei* is very similar to *japonicum*, but the double form is well worth growing; the flowers are very double, similar in colour to the type, but lasting a very long time in beauty. All the above are beautiful Lilies, and should be largely planted in the hardy flower garden. They are not fastidious as to soil or situation, forming after becoming established large masses yearly of gorgeous floral beauty. They are well adapted for town gardens.

L. speciosum.—This is erroneously called *lancifolium* by many, but the name here given is correct. Like the last two species, this is at the head of a very large number of varietal forms; but I shall only notice four, although several of the others are equally as beautiful. *Album* grows from 2 to 3 feet high, producing several large flowers, pure white, sweetly scented. *Rubrum* grows about as tall as the last; flowers white, tinged and spotted with crimson. *Roseum*, flowers

white, suffused and spotted with rose. *Punctatum*, flowers white, freely spotted with delicate pink spots; a most beautiful form. In fact, they are all very lovely. These Lilies flower as late as any, lasting till the frost comes. They are most charming plants for the decoration of the sitting-room or conservatory. Their beautifully blended colours, with delicious fragrance, render them most worthy the attention of all. They flourish outside. I had them flowering freely outside last autumn. They were plunged from pots, and the roots were placed on a bed of well-decayed manure, and they were happy enough with it. To grow them well in pots they require watering with liquid manure at least twice a week. They are by no means difficult to grow, employing as soil loam, leaf soil, sand, and a good portion of well-decayed manure.—T.

SCOTTISH PANSY SOCIETY'S SHOW.

THIS was held on the 18th inst. in the Calton Convening Rooms, Edinburgh, when a larger number of blooms was exhibited than on any previous occasion, though as a drawback there were a larger number of rough flowers than are generally staged.

For the best twenty-four Show Pansies, dissimilar, Mr. W. Paul, Paisley, was first with *Gertude*, *Lavinia*, *A. W. Paul*, *Fascinator*, *Inspector*, *A. Cameron*, *Rev. J. Morrison*, *Sir Peter Coutts*, *James Dalziel*, *Mr. Goodall*, *Cyprus*, and several seedlings. Messrs. Dickson & Co., Edinburgh, were second, and Mr. W. Dickson, Paisley, third.

For the best twenty-four Fancy Pansies, dissimilar, nurserymen, Messrs. Downie & Laird, Edinburgh, were first with *J. W. Stratton*, *Mrs. Scott Plummer*, *Mrs. Black*, *Countess of Home*, *Lady Heathcote*, *Mrs. E. H. Wood*, *Mrs. Robertson*, *Sir P. K. Murray*, *Mrs. W. Brown*, *F. W. Leland*, *John Murray*, *Miss Minnie Methven*, *A. McLeod*, *Mrs. Dewhurst*, *Miss McMeeking*, *Lady Falmouth*, *Lady Hay*, *Robert Laird*, *J. B. Downie*, *Mr. L. T. Heming*, *Lady Graham Montgomery*, and some seedlings. Messrs. J. Cocker and Sons, Aberdeen, had the second prize.

For eighteen Show Pansies, dissimilar, Mr. T. McComb, Launston Castle Gardens, was first with yellow grounds—*Mary McComb*, *R. Smith*, *John Buchan*, *J. Champion*, *Alex. Mitchell*, and *Finella*. White grounds—*Mrs. Buchanan*, *Clara Belina*, *Lizzie Fleming*, *Mr. Hathart*, and *Vesta*. Selfs—*D. J. Whitton*, *True Blue*, *Mrs. Dodds*, *George Ross*, *Wm. Forbes*, and *Golden Circle*. Mr. A. Borrowman, Beestock, second. The best flowers in this collection were *Jessie Foote*, *Miss Ross*, *Mrs. Kennedy*, *Wm. Spears*, and *Robert Burns*. Mr. W. Forbes, Paisley, third.

Best eighteen Fancy Pansies, dissimilar (gardeners), Mr. D. Findlay, Lennox Castle, was first with a splendid lot of blooms—*F. W. Leland*, *Christine*, *Vesta*, *Countess of Strathmore*, *Mrs. E. H. Wood*, *Mrs. Taylor*, *Thalia*, *Mrs. Crawley* being the best flowers. Mr. Borrowman was second, and had fine blooms of *J. Grieve*, *Mrs. Taylor*, *Mrs. E. H. Wood*, *Thalia*, *W. Elder*, *Mrs. Scott Plummer*, and *W. E. Gladstone*. Mr. McComb was third. The classes for twelve and six Show and Fancies for gardeners were respectively well filled, the prizes going much the same as in the classes for eighteen.

For best eighteen Show Pansies, dissimilar (amateurs) Mr. James Skinner, Penicuik, was first; Mr. James Donaldson, Gala-shiels, second; and Mr. George Ross, Laurencekirk, third. For the corresponding class in Fancies Mr. L. T. Fleming, Berwick-on-Tweed, was first with a grand lot, some of the finest in the Show being staged. Particularly fine were *Mrs. Wood*, *Lady Falmouth*, *Lady Hay*, *Mr. James Watt*, *Nelly Thomson*, *Mr. Paul*, *William Melville*, *Robert Cowan*, and *Mrs. D. Stuart*. The amateurs' classes were largely filled and keenly contested.

In the classes open to gardeners and amateurs, and for twelve Show and twelve Fancy Pansies, dissimilar, Mr. T. McComb was first with grand flowers; *Mrs. Jameson*, *Mrs. Birkmyre*, *John Taylor*, *T. McComb*, and *Geo. Melvin* in Fancies, and *Sunny Park Rival*, *Robert Burns*, *Clara*, *Wm. Forbes*, and *Mary McComb* in Show varieties, being particularly fine. Mr. L. T. Fleming was second with a stand containing some grand blooms. The corresponding classes of twelve and six were also well filled.

For twelve new Pansies in commerce Messrs. J. Cocker & Sons were first; *Captain Crombie* and *Alexander Watt*, two dark selfs, being the most striking flowers. For twelve seedlings not in commerce Mr. W. Dickson, Paisley, was first. In the open classes for six Show Pansies two yellow, two white, and two dark selfs, Mr. G. Ross was awarded the chief prize. For eighteen show Pansies, dissimilar, Mr. W. Paul, nurseryman, Paisley, was first with a grand collection of fresh blooms.

For twenty-four self Show Pansies, distinct vars., four blue, six white, six yellow, and eight dark, Messrs. Dicksons & Co. secured the premier position; and also in the class for the best twenty-four Fancy Pansies, dissimilar, in classes thus—four blue, four crimson, four white, and four yellow selfs, and four Picotee-edged.

In the class for bedding Violas in twenty-four bunches, dissimilar, Messrs. Downie & Laird were first with a superior collection, conspicuous being a pure white seedling; *A. Grant*, plum; *Sove-*

reign, the finest yellow; Abercorn Beauty, canary; Duchess of Sutherland, mauve. The same exhibitors were also to the fore for twelve bedding Pansies. An intense black variety named Pluto was very telling in this collection. Messrs. Downie & Laird exhibited a stand of a hundred Fancy Pansies, very beautiful. Messrs. Dickson & Turnbull, and Messrs. Cocker & Sons, Aberdeen, also exhibited boxes of blooms. A collection of twenty-four Pyrethrums were shown by Messrs. Cocker & Co. The Exhibition was a very fine one.

BIRDS—PROTECTION VERSUS DESTRUCTION.

ADMIRERS and protectors of birds are bound by interest to restrict their preference when seeking to insure the safety of their feathered friends, for to accord equal favour to all is extremely undesirable. Some are anxious to preserve eagles, falcons, and hawks—birds of prey—to maintain the balance of power in nature, as they term it; although to tolerate the kite and sparrowhawk would inflict annoyance and loss on fanciers of pigeons and poultry, for, though hawks may occasionally feed on a mouse or a mole, a fat pigeon is more acceptable, and a chicken is devoured with great relish. Except the kestrel, or windhover, that feeds principally on field mice, the screech and barn owl which destroys immense quantities of mice, besides great numbers of beetles and other insects, the whole of the hawk family may be marked for destruction as more or less antagonistic to animals which contribute to the pleasure and benefit of man. The goat-sucker or nightjar is nocturnal in habit, destroying the chafers and large moths. The swallow, swift, chimney martin, martin or window swallow, and sand martin are all insect-eating birds, and should be placed in the first rank for protection. The elegant creeper and nuthatch, though it feeds on nuts with quantities of insects, and the little wren, must be included in the list of birds to be saved from wanton destruction. The grasshopper warbler, the nightingale, the chiffchaff that feeds on the leaf-rolling caterpillar, the willow warbler or wren, the golden-crested wren, one of the smallest of British birds; the redstart, and the hedge accentor or hedge sparrow are deserving of strict preservation. The long-tailed titmouse, because it picks diseased buds draws upon it the vengeance of the gardener, but is really harmless; the pied and yellow wagtail, the meadow pipit or titlark feeding on worms, slugs, and insects; the water ouzel or dipper, are all friends of the farmer and gardener. The spotted, common, and pied flycatchers deservedly receive protection, but unfortunately, like swallows, they come to us in less numbers than formerly. The shrikes, though the great grey shrike is but an occasional visitor to this country, and preys upon mice, &c., and the red-backed shrike feeds on beetles, &c., may both be set down as useful.

Of the finches the goldfinch, the common linnet, the greenfinch, the skylark, and the woodlark do good by the quantities of small seeds they eat, as well as insects, and to their number must be added the chaffinch, though it takes small seeds, but is easily kept off by coating the seeds with red lead. The green and spotted woodpecker, wryneck (principally feeding on ants), and the cuckoo, which feeds mostly upon the hairy caterpillar, are all insectivorous. The partridge, the quail, the peewit, the curlew, the common sandpiper, the woodcock, the snipe, the corncrake, the waterhen, and the coot are harmless; also the gulls and terns may all be marked for protection.

No one who has had experience in gardens and the country can come to any other conclusion than Michelet's—viz., that every summer we should be in danger of famine if the birds had been constituted to suckle their young; indeed there are insects, as locusts, wireworms, grubs without number, beetles, weevils, and sawflies that would eat up every herb were there no birds to keep them in check. It is needless, indeed, to enlarge on the usefulness of birds, for the immense numbers of insects can only be kept from undue increase by the constant activity of our feathered friends.

I pass on to those birds that may be charitably classed as more useful than injurious. In the first rank I will place the rook, which lives in a kind of semi-domestication, building its nest in a grove of trees near a house or in a park or wood, but usually near the habitations of man, or at least near to cultivated land. In this country we are not much troubled with cockchafers, simply because the rooks devour their grubs, as well as those of the tipulas or daddy-longlegs, wireworms, &c. The rook may do harm in pulling up young corn to get the grub at the roots, and newly set Potatoes to feed on the wireworm, and may even occasionally seek a share of fruit, but

rarely, and then only Cherries and Pears, with Walnuts in due time; but they may be frightened away by occasionally firing a gun, and their numbers can be kept within reasonable limits by shooting the young when leaving the nest, yet even this should be practised discriminately, as in the case of jackdaws that are not shot their numbers do not increase to an undue extent. The jackdaw kills mice, the gulls also eat mice, beetles, grasshoppers, &c. The crow or carrion crow is equally useful with the rook in destroying insects, also mice and young rats, but when these fail its attention is given to the duck-pond or farmyard, a duckling or chicken being carried off; it is charged with taking eggs, as is also the hooded crow, both of which should be destroyed, along with the jay and magpie. The starling clears grass land of the larvæ of the tipula, and is equally attentive to lawns during the breeding time. Its only depredations are made upon Cherries; and though prejudice is against its admittance to the dove-cote, it may be allowed to remain without injury to the pigeons' eggs.

The house sparrow is considered of no value by Mr. Peach, and the greatest of bird-delineators, Mr. Harrison Weir, likes but few in a garden; I thank him for admitting the good of a few. Though sparrow clubs still exist, many sparrows remain to consume an unestimated quantity of seeds that if left to go along with the dung would develop into weeds. The quantity of insects destroyed in rearing a brood of sparrows is variously computed, but the number cannot be far short of a thousand per day; and the sparrow takes an especial delight in destroying house flies, searching for them in the thatch of corn and haystacks as well as upon the housetops, attacking the cockchafer, being as fond of the perfect insect as the rook is of the grub, possessing an inordinate appetite for the food of poultry or pigs, varying its diet with any waste of the household that may be lying about. In the garden the sparrow is fond of the tender haulm of peas as well as the peas themselves, and plays havoc often with seedling vegetable plants and Crocus flowers. The Pea haulm may be protected by being dusted whilst damp with dry wood ashes, soot, or quicklime, soot being preferable. Of their fruit-bud-destroying propensities I have no experience, though I have had thirty years' practice, but I by no means wish it to be understood that the sparrow will not destroy fruit buds, as its companionship with man is calculated to make it omnivorous. The sparrow is about the only bird left when the ground becomes occupied with human tenements, and, together with the rook, jackdaw, and starling, is influenced by cultivation and civilisation, being constrained to dwell in communities. In immoderate numbers they may be injurious, just as overcropping and overstocking is inimical to the interests of farmers and gardeners.

The thrush or throstle and blackbird are among the most powerful and sweetest of our native songsters, and as such are protected in most gardens. That they for one-half of the year feed upon worms and other pests of the gardener and farmer is well known, doing, it must be admitted, much good in gardens and to lawns, grass lands, &c., taking not only worms but the eggs and young snails and slugs, especially the throstle, which adroitly destroys shell snails; yet so soon as a Strawberry shows at all red it is set upon, and all through the early part of the fruit season they feast upon Strawberries, Cherries, Gooseberries, Raspberries, and Currants, later on taking Plums, Pears, and Apples—anything with pulp, be it cultivated or wild, they continue to feed upon so long as it lasts, varying their diet with worms, &c. To have fruit unless protected by nets, &c., is simply impossible, and a plantation of bush fruit only affords a harvest for the birds. The missel thrush is no better than the blackbird and thrush, the fieldfare stripping Hollies of their berries and Thorns of their haws. Nets as protection are very well for those consuming their own fruit, but are hardly within the reach of growers for profit; and nets are not easily applied except to quarters of bush fruit and wall trees. Pyramids and even standards cannot well be protected.

The whitethroat, blackcap warbler, and garden warbler exist upon insects so long as the Raspberries, Cherries, and Currants remain green; but when they perceive the red fruit the rascals fall to with the blackbirds and thrushes, and are much more difficult to keep off, as the mesh of the net must be very small to exclude them. The redbreast is as great a thief as any, never failing to show itself in the vineyard when outdoor dessert is scarce. The only effective plan is to bait a steel trap with a Grape berry secured to the table, and set to catch the depredator by the head or neck. Of the great titmouse it must be said that it is very active in searching for insects, but varies

its diet with grains and seeds of various descriptions, particularly in autumn and winter, occasionally pecking Pears when nearly ripe, and feasting on green Peas. The blue titmouse, or billybiter, delights in pecking holes in Pears and Apples, taking Peas from the pod, and yet does much good in a garden by the destruction of great numbers of insects, none of the tits destroying the buds of fruit trees, at least as far as I have observed them. The hawfinch, though somewhat rare and shy, is a perfect gourmand for Peas and Cherries, besides being fond of corn like the rest of the finches. It is easily scared by firing a gun. The bullfinch is a beautiful bird, feeding its young exclusively upon insects, also consuming a quantity of seeds, which they exist upon during the winter; but so soon as the Larch buds begin to swell they pay them particular attention, also the buds of Gooseberries, Plums, Pears, and Apples, generally finishing the bud season with Beech. We have generally a few pairs nesting in the Portugal Laurels, and catch a young one now and then in the Raspberries, to the seeds of which the young birds appear partial. To tolerate this bird during the fruit-bud season is to preclude the prospect of fruit.

The crossbill often frequents Fir plantations, but I have not noticed them do any harm in gardens or orchards, though they will divide Apples to get at the pips. The Bohemian waxwing only visits us in severe frosts, and then feeds on haws and haws. The kingfisher, notwithstanding its beauty, can hardly find favour with the angler any more than the heron, though there are few of either to trouble the proprietors of trout streams. Woodpigeons are fond of the tops of Turnips and Brassicas generally, in spring or severe weather frequenting our garden frequently, eating the leaves of newly planted Cauliflowers, &c., and occasionally visiting the Peas. The only good they do is in consuming quantities of small seeds. The grebes are great destroyers of water insects, and so are the semi-domesticated pheasant, especially the young. Poultry and pigeons do good in that way; indeed there is scarcely a bird that does not prey largely upon insects.

Birds, however, make some mistakes, and when they make havoc of the fruit and grain crops out of all proportion to the benefit conferred in the destruction of insect life it is clear they exist in undue numbers. On the other hand, because birds in large numbers do mischief it is wrong to infer that they are natural foes, and some people ignore the good the birds do, seeing nothing but the mischief.—G. ABBEY.

WORK FOR THE WEEK.

FRUIT HOUSES.

Peaches and Nectarines.—The continuous early forcing of trees to ripen the fruit in May is a great strain upon their energies, as they have to make the growth during the early spring months and mature it in early summer. It is necessary to ventilate, after the fruit is all gathered, to the fullest extent, removing if possible the roof lights entirely after the middle of this month; or if the roof lights are not moveable, in addition to full ventilation, the borders should be frequently damped, and be duly watered so that no check is given likely to induce the premature ripening of the young wood and leaves. Keep the latter free from red spider by syringing occasionally, and if necessary apply an insecticide, as it is of the greatest importance that the foliage be kept healthful and ripen off naturally. Laterals must be kept stopped, but where there is space to allow of growth being made without overcrowding encourage it, as a steady and continuous growth, by promoting root-action, will prevent the wood and foliage maturing too early. All shoots that have supported fruit and are no longer required should be removed to admit light and air freely to the growths, and if there is too much crowding of the shoots for next year's bearing thin them well out, alike to make space for the free admission of light and air, and the action of water upon the foliage to cleanse it of red spider. Houses in which the fruit is ripening will only require fire heat during cold nights and dull days. Gentle warmth is essential along with free ventilation to secure flavour, as well as to assist the later kinds in swelling and finishing. The tying-in of the shoots in the later houses must have attention. Shoots not required for next year's crop and those not wanted for the proper furnishing of the trees should be removed, keeping any laterals upon strong shoots closely pinched. Young trees should be properly disbudded, and the shoots for next year's bearing be stopped at about 12 to 14 inches of growth, but the extension or main shoots may be allowed to extend their full length provided they are evenly balanced. Inside borders where the fruit is swelling should be mulched with manure, and have efficient waterings as required. Ventilate early in the day, increasing it with the advanced temperature, avoiding a close vitiated atmosphere.

ORCHARD HOUSE.

Cherries in this structure will now be ripening or ripe, and syringing must cease, or the fruit will crack. It is important that the trees be perfectly free of aphides, or they will increase rapidly when the syringing is discontinued, completely spoiling the fruit as well as doing injury to the trees. If the trees are in pots they should be removed if found necessary to a separate structure for fumigation, and if they could remain there so as to be cool and dry in order to have the fruit in perfection and preserve it in good condition to as long a time as possible it would be an advantage. It will be necessary to place some netting over the ventilators to exclude birds. The trees must be kept moist at the roots. Pears may if convenient be placed in a favourable situation outdoors, the pots being placed on and surrounded with ashes, and where there are duplicate trees in the house a desirable succession of fruit will be produced. The fruit from trees outdoors though not so imposing in appearance is often superior in quality to that grown ripened under glass.

Peaches and Nectarines should before this time have had the fruit carefully thinned and will now be swelling rapidly. The trees should have liberal treatment; rich mulching and liquid manure will be more particularly necessary where the trees are in pots and carrying a heavy crop of fruit. A genial atmosphere should be maintained by copious syringings every evening when the weather is warm, and closing the ventilators early when the weather is likely to be cold at night. Go over the trees frequently, and disbud or pinch back strong shoots so as to keep them in good form, but avoid too close stopping and denuding the trees of too much foliage at one time, as this is unfavourable to the health of the trees and may greatly injure the crop. Plums will bear pinching rather more closely than Peaches and Nectarines. Fig trees in pots or planted out should be well supplied with water, every care being taken to prevent them receiving anything like a check likely to cause the fruit to drop off. The points of all strong-growing shoots should be pinched out, weak and unnecessary growths remove altogether.

Vines trained over the pathway, and a single rod at the ends of the house, will afford some acceptable Grapes, they being trained to wires 15 to 16 inches from the glass. The laterals should be stopped at one joint beyond the fruit, and each shoot should be carefully drawn in and tied to the central wire so as to form a compact cordon, which will not shade the trees below much, and from which the bunches of Grapes depending will have a pleasing effect.

FLOWER GARDEN.

The late rains have given a start to plants recently put out, and to aid them as much as possible in filling the beds all blooms of such as are weak should for the present be picked off, and the soil kept stirred between the plants. In dry seasons mulching is of the utmost importance, especially in light soils, as beds so treated are almost independent of the watering pot; indeed watering without mulching is a waste of time, as light watering only encourages surface roots for the sun to destroy, and heavy waterings cause the soil to crack, letting in dry hot air that quickly absorbs the moisture and injures the tender rootlets. For such moisture-loving plants such as Calceolarias, Violas, Verbenas, &c., mulching is a necessity. Trailing plants, such as Verbenas, Petunias, &c., will require frequent attention in regulating and pegging down the shoots, having previously mulched the beds.

Push on the propagation of spring-flowering plants, such as Arabis, Aubrietias, Violas, Daisies, &c., according to requirement, and sow Wallflowers and Stocks of the Brompton, Giant, and Queen varieties for blooming next spring, pricking-out seedling Antirrhinum, Wallflower, and other biennials or perennials intended for next spring or early summer flowering. Late-sown annuals should be freely thinned, so as to leave room for full development. Choice Carnations should, as soon as possible, be layered in fresh sandy soil, and pipings of those and Clove varieties, also Pinks inserted under handlights on a shady border. Golden Thyme for winter and spring bedding strikes freely from cuttings under handlights on a north border, and *Stachys lanata* now divided and planted in a shady spot will be in right order for moving in autumn for winter bedding, for which it is very useful. Dahlias and Hollyhocks will require stakes, and should be well mulched. If the latter are required for exhibition but one stem must be left on each plant. Climbing and pillar Roses should be neatly tied to their supports; all crowded growths should be thinned out, decayed flowers removed, and water supplied freely to prolong the flowering. Afford Roses in beds, &c., water or liquid manure abundantly, and pick off all faded flowers.

Rhododendrons, Kalmias, Azaleas, &c., as they go out of bloom should have the seed pods or flower stems removed, not only for the sake of neatness, but for increasing the vigour of the plants, and in dry soils water abundantly to assist them in completing the growth and forming flower buds. All loose or straggling growths should be cut-in, a remark that applies to the ponticum varieties, as few of the hybrids produce growth to require it. Prune evergreens where it is desirable to keep them to any particular shape, as by doing so now they will make sufficient growth to prevent undue formality. Run the machine over the grass fre-

quently—once a week or so; but avoid cutting close in dry weather, setting a little higher to prevent this. Bents escaping the machine are a great disfigurement to a lawn; they should be switched off with the scythe. Maintain everywhere the utmost neatness, as most of the pleasure of a garden depends upon how it is kept. Roll gravel walks after rain, and if weedy give a dressing of salt in settled weather, as in showery weather it is not so effectual, and keep it 6 inches from the margin, or it will injure the grass and other live edging. Where Box is used as an edging the use of salt is not safe, and should be avoided.

PLANT HOUSES.

Stove.—*Aschynanthus* of the drooping section, such as *Lobbianus*, must be well supplied with water, or they will not flower freely. The positions they occupy near the glass render the necessity of often examining the plants imperative.

Pancratiums and Amaryllises.—*Pancratium fragrans*, *P. caribæum*, and *P. ovatum* are fine flowering plants, for bouquets of an artistic description indispensable, combining purity of colour, elegance of form, and fragrance. The plants grow well in loam with a little sand. They require light situations, copious supplies of water when growing, but must not have too much when at rest, or the soil gets sour and the roots perish. *Amaryllises* after flowering must have light airy positions and copious supplies of water, taking care that the foliage does not fall a prey to red spider, or strong healthy bulbs will not be formed.

Rondeletia speciosa major.—This is a fine summer and autumn flowering plant, a great bloomer, lasting long in beauty. Good fibrous loam with a sixth of sand suits it. Plants started early will now be showing flower, and must not be allowed to suffer by want of water. Their bright red trusses are very useful for cutting, and last long in that state. After the flowers are faded on the plant, do not cut back but merely nip off the truss, and it will break again at once and bloom a second time.

Impatiens Jerdonia.—This is a beautiful decorative plant now seldom seen, and a profuse bloomer. It requires to be grown near the glass in a house kept rather drier than an ordinary stove, and must not be overpotted, and does well in a turfy loam with at least a sixth of sand, affording good drainage, and when beginning to flower afford weak liquid manure occasionally.

Clerodendrons.—*C. fallax* and *C. Kæmpferi* are neglected plants that have great decorative value with imposing foliage, and bright distinct flowers produced freely twice in the year. Plants that were started early and flowered should be cut back to two or three joints below the flower heads, placed in heat where they will break freely and soon show a second crop of flowers, the plants being well supplied with manure water. *C. fragrans* with double flowers is very fragrant, and requires the same treatment as the others. If required for decoration the plants, as the flower spikes open, should be gradually inured to a lower temperature, and thence transferred to the warmest part of the conservatory, where they will be useful when flowers are not overplentiful.

Stove Climbers.—These trained to the roof must have attention. Those growing very freely but not showing a free disposition for flowering should have water only to prevent flagging severely, whilst those that are weak should be assisted with liquid manure. *Stephanotis* that have flowered in pots should if required be shifted and grown on, but if large enough they may be treated so as to harden their growth, which can best be done by placing them in moderate heat with a dry atmosphere and more air than where they have been grown with just sufficient water to maintain the foliage fresh.

Insects now increase apace and must be promptly destroyed, fumigating against thrips and aphids, syringing and sponging for destroying red spider, and applying an insecticide with a brush. Sponge or syringe for extirpating mealy bug and scale. Morning syringing if practised at all must be early, but damping available surfaces other than the plants is more safe, and the afternoon syringing should be done early to allow of the foliage becoming dry or nearly so before nightfall, damping the paths in the evening.

TO CORRESPONDENTS.

FRUIT TREE CULTURE IN AFRICA (*Subscriber*).—There is no book published on the subject. If you have a practical acquaintance with fruit culture in England you will find it of great service to you in other lands, as you will quickly perceive the changes and modifications that are required in a different climate.

DOUBLE WHITE ROCKET (*B. Westfield*).—The flowering spike sent is not of the "old Double White Rocket," which is pure white, and has larger flowers than those before us. We are unable to inform you where you can obtain the good old border flowers you desire, and can only suggest that you write to nurserymen and florists who devote special attention to hardy flowers, some of whom may be able to supply you with the true variety.

MILDEW ON ROSES (*H. S.*).—The leaves sent are infested with mildew. The plants will undoubtedly be benefited by being placed in the open air for a time, and if you also dissolve 2 ozs. of soft soap in a gallon of water and syringe them with the solution, and further when the leaves are moist dust the affected parts with sulphur through a muslin bag, the fungus will soon disappear. This dressing, repeated if necessary, will destroy the mildew if applied to the plants in the greenhouse, if for any special purpose you desire to keep them in that structure.

ZONAL PELARGONIUMS (*H. S.*).—Many of the choice large-flowering varieties should be grown in pots and flowered under glass; but the dwarf free-flowering varieties, such as *Vesuvius* and others known as "bedders," succeed alike well under glass and in the open air unless the soil and climate are unsuited to this class of plants in the open ground.

SOIL UNSATISFACTORY (*West Suffolk*).—Although your soil is so light we think the subsoil is wet, and in that case draining is necessary. We know of a district having soil much of the same nature as yours, and which has been greatly improved by judicious draining. You have done right by salting the land, and it certainly would not be "absurd" to give it a good lining, but on the contrary would probably be beneficial. Manure should be applied to the surface in the form of a mulching; the rains would wash down its virtues, and the covering would retain the moisture in the ground during hot weather, and prevent the soil "being blown away."

EUPHORBIA JACQUINLEFLORA and **POINSETTIA** (*Old Sub.*).—If you follow the instructions given on page 430 of our issue of the 3rd inst. you will succeed in your object. Growths about 3 inches in length taken off with a heel strike the best; but cuttings taken without a heel will emit roots in silver sand kept constantly moist, and the pots plunged in a good bottom heat in a close frame or case, which should be shaded to prevent the foliage flagging. The *Euphorbia* cuttings will be better if placed under bell-glasses. The plants topped now will with good cultivation flower at Christmas, but we should take off the tops wanted for cuttings.

SEEDLING AQUILEGIAS (*C. Stewart*).—The flowers sent, the result of crossing between *A. cerulea* and *A. Chrysantha*, are very beautiful, and the varieties are highly worthy of culture both in pots for the conservatory and in flower borders. The sepals are bluish lilac, and the tubular petals creamy white, pale primrose, and deep primrose, and are of good form and substance. The varieties, however, though good, are not distinct from those raised by Mr. Douglas at Loxford, who has many attractive forms of these flowers of similar parentage to yours, and very closely resembling the flowers now before us.

TOAD PIPE (*J. B. Atkinson*).—Your letter did not contain a specimen of the weed of which you complain, but we presume it is *Equisetum palustre*, which is known in Scotland as Puddock (Frog) Pipe. This being a marsh plant its presence in large quantities is indicative of the presence of moisture in the soil. Some sandy soils contain a great excess of moisture, and your garden no doubt requires draining, although you think the "natural drainage is sufficient to keep it clear of much water." In addition to draining the land we know of no way of eradicating the weed except forking it out carefully, and not permitting any portions that escape to make any growth. If no top growth is allowed for a year or two many of the roots will decay. Heavy dressings of lime would also be beneficial in checking the growth of the weed.

TUBEROUS BEGONIAS DYING (*Mrs. Copley*).—You have been misinformed about your plants. They are certainly *Begonias*, and after flowering during the summer the growth dies down, the tuber in the soil remaining alive for the production of growth the following year. Occasionally, however, the tubers die, or at least do not produce growth freely. They are often injured by being kept too dry—dust dry, in the winter, while they decay if kept very moist and in a low temperature. Grow the plants well during the summer so that they form good corns, and keep the foliage clean and fresh as long as possible to mature them, reducing the water as the leaves show signs of decay in the autumn. If you can surround the pots with ashes or cocoa-nut fibre refuse after the plants have died down, and place them in the warmest position in theinery, you may by occasionally watering the material in which the pots are plunged keep the soil sufficiently moist without watering it to prevent the corns shrivelling, while at the same time it will not be so wet as to cause them to decay.

FORGET-ME-NOTS (*A Constant Reader*).—The white variety usually grown in gardens is *Myosotis arvensis* alba, which comes true from seed even if the plants from which seed is saved are grown in alternate lines with the blue form *M. arvensis*. The earliest, dwarfest, and best blue *Forget-me-not*, however, is *Myosotis distitiflora*, which does not bear seed so freely as the others, and is often increased by division after the plants have flowered. The variety *Weirleigh Surprise* was a chance seedling found by Mr. Harrison Weir in his garden in Kent; it is white with every petal clearly banded with blue. It is a charming variety for pots, and we believe comes quite true from seed. Seed of *Forget-me-nots* should be sown now for obtaining fine plants for flowering next spring. The plan adopted by Mr. Fleming of Cliveiten is, when clearing the beds for the summer flowers, to cut off the tops of the *Forget-me-nots* and lay them on the ground, keeping each sort distinct; the seed is thus scattered, and the tops shading the ground keeps the soil moist and aids the germination of the seed; but you may sow in shallow drills in a cool moist border. Seed of *Primula japonica* may be sown now in pans and placed in a cool shaded frame, the soil to be kept constantly moist. The plant is hardy in moist soils and districts.

OMPHALODES VERNA (*Devonian*).—What Mr. Luckhurst once wrote about this plant will answer your inquiries as to its culture, usefulness, and adaptability. "It requires no special culture, thriving in ordinary soil equally out in the full bright sunshine or under the shade of trees. Once planted there is very little danger of losing it, for its spreading habit and the freedom with which its offsets or side growths are produced have procured for it the title of the Creeping *Forget-me-not*, small plants becoming clumps a foot or more in diameter in a couple of years. Such a lovely plant is in its right place wherever flowers will grow. It is one of the best of early-flowering plants for the rock garden. It proves an admirable associate for the Lily of the Valley under the shade of overhanging branches, along the sides of wild wilderness walks, the intense blue trusses of the *Omphalodes* and the pure white Lily bells forming together such a bouquet as will bear the palm from the choicest exotics." Clumps of it, too, tell well in vacant spaces among shrubs or to fringe the margins of *Rhododendrons*. In the spring garden it is equally effective, but it is found to answer best for mixed beds, its flowers usually fading by the end of April. Another special merit must not be overlooked, and that is the facility with which it may be forced into flower in the depth of winter, and thus again be brought into contact with the Lily of the Valley in the conservatory."

DWARF IVY BUSHES (*A Very Old Reader*).—The advice to which you allude as "having been given in the *Cottage Gardener* many years ago" is probably the following:—Select some stout flowering branches from a ruin, or from near the bottom of the Ivy half strangling a tree. Fix on a part of the branch as near the bottom as you can, to give you the more length of trunk after it is rooted; then to cause it to root cut off a ring of 3 inches in

width of the bark, all but about the width of the fourth of an inch, and leave that narrow slip of bark to carry on the circulation. Then get some sheets of gutta percha, paper, or parchment, and form each of them into the shape in which grocers make their soft sugar parcels; the pointed end tie tightly a little below the ringed part, and let the open part of your paper be 9 or 10 inches wide, and deep enough to hold as much good, rich, sandy loam as would fill a No. 24 pot. Pack the soil tightly round the ringed part, but not very tight above it, water it well, and keep it well watered till October, when it will be as full of roots as possible, and then cut it off from the old tree and plant it carefully in a sheltered place, and see it is well staked. A layer of moss on the top of the soil in the gutta percha paper, and a little of the moss all round the wound in the bark, will hasten the process of rooting.

ROSE SHOWING AND BOXES (H. P. B.).—The blooms should be exhibited in boxes, the stems of the blooms being placed in tubes filled with water, the tubes being embedded in moss, the smoothest and freshest of which should form an emerald surface to display the blooms to the greatest advantage. Each bloom should be cut with as much foliage attached to the stems as possible, but no leaves must be added. If the blooms are cut on the morning of the show they should be secured early and before the dew has evaporated from their petals. The moss in the box must be moist, and the blooms should be arranged so as to stand a few inches above it. Many new beginners spoil their boxes by pressing the blooms close down on the moss. The boxes should have lids which, especially on sunny mornings, must be kept over the blooms until the last possible moment before the judges enter the show. We have known many prizes lost and Roses spoiled by the blooms being exposed too early and too long. The boxes should be 18 inches wide, 6 inches high at the back, and 4 inches in the front. The length of the boxes should be, for twenty-four Roses, 4 feet; eighteen Roses, 3 feet; twelve Roses, 2 feet 2 inches; and six Roses, 1 foot 6 inches; the covers being 7½ inches in depth at the back, and 5 inches in front, 4 feet 1 inch in length, 1 foot 7 inches in breadth, and having a narrow beading within the four sides, half an inch from the bottom of the lid, overlap the boxes, leaving ample room for the Roses, and are secured for travelling by stout leather straps. These sizes are given by the Rev. Canon Hole, the President of the National Rose Society in his "Book about Roses."

PLANTING VINERY (P.).—For a house with such short rafters as yours four permanent Vines will be ample; and as we presume you do not intend employing much fire heat you cannot have more suitable varieties than Black Hamburg and Madresfield Court as blacks, with Buckland Sweet-water and Foster's Seedling as whites. If any one of these does not succeed well, you can readily remove it and take up three rods from a more satisfactory Vine near it, for each Vine will support three rods as well as two. You may, if you desire to have Grapes as soon as possible, plant eight Vines, four to be supernumeraries, two of Black Hamburg, and two of Foster's Seedling. These if they produce stout canes, as they should do the first year, may be left nearly their entire length, only the immature extremities being removed, and the Vines will bear a good crop. The permanent Vines should at the first pruning be cut down to the base of the rafters, when they will produce two very strong growths which can be trained side by side between the supernumeraries. In the following autumn—i. e., the autumn of the second year, the supernumeraries may be removed, or (if you still desire a few Grapes) be divested of the growths by rubbing off the swelling buds two-thirds the length of the cane, and thus afford room for one of the canes of the main Vines occupying its permanent position, the temporary Vines in the meantime bearing at top of the house, and as soon as this crop is cut remove the Vines altogether. At the second pruning the permanent Vines should be shortened to within 3 feet of the rafters, and each rod may bear two or three bunches; continue the practice of shortening the canes annually until the roof is covered in three years. If an early supply of Grapes is not an object of importance with you, you will of course only plant four Vines to begin with.

SEEDLING PANST (Idem).—The flowers sent are of good form and substance, while the colour is rich and peculiarly flaked. The variety is worthy of preservation, but we do not think will be of any great commercial value.

RED SPIDER ON VINES (P. W. L.).—Unquestionably the Vines will receive permanent injury if the insects are permitted to increase to such an extent as to cause the foliage to fall prematurely. Fumigation is of no use as a remedy, and sulphuring the pipes will be of little service in your case. We know of no safer and better means for you to adopt than to syringe the Vines and dislodge the pest. But this must be no ordinary syringing. The syringe should be directed between the bunches, the water being applied with great force to every leaf. Commence at one end of the house and work backwards to the other end, washing each Vine thoroughly; then turn round and work back again in a similar manner, using five or six gallons of water to each Vine. You have only to be careful that the water does not strike the bunches; that which falls from the roof and trickles through them from the foliage will not materially disfigure them. Do this early in the afternoon, and leave the ventilators open. Ventilate very early next morning and freely throughout the day, first shaking the Vines and bunches to remove the water "hanging about." Do not keep the atmosphere dry, and ventilate freely. Two or three such washings on alternate days will cleanse your Vines of the pest and benefit them considerably. We have seen this plan adopted of extirpating red spider with great success. It is surprising how little bloom is washed off the Grapes when the syringing is done carefully, but it is far better even to lose a little bloom by the water than to lose the foliage by the red spider. Yours is an extreme case, and you must adopt an extreme remedy promptly; you have hesitated too long and given the enemy a great advantage.

FUNGUS ON VINES (M. A. F.—B. G.).—The leaf sent is infested with a fungus in patches where the tissue has been injured. We think the house has been kept too moist and close—i. e., the ventilators have not been opened sufficiently early and the foliage has been scorched, and the fungus, as it usually does, has taken possession of the injured parts. You may dust the brown patches with sulphur to kill the fungus, and you must pay greater attention to ventilation and the management of the atmosphere. Do not entirely close the top lights of the house at night, and immediately the temperature rises in the morning admit more air, and continue increasing to prevent a sudden increase of heat. Damp the house occasionally, but let it become quite dry at the least once a day, and do not syringe late in the afternoon.

INSECTS ON CHRYSANTHEMUMS (H. H.).—The insects sent in a letter were of course crushed to a shapeless mass. Dip the tips of the shoots in a solution of soft soap and tobacco water, or dust them with tobacco powder. If the lower leaves are also infested lay the plants on their sides and syringe

them with the above solution, turning them over during the process so that every leaf is reached.

NAMES OF FRUITS (C. R.).—The specimen was so much shaken and crushed by not having been packed firmly in the box as to be almost unrecognisable. We think, however, it is the Castle Kennedy.

NAMES OF PLANTS (C. B.).—1, *Fraxinus Ornus*; 2, Probably a *Cassia*, but too much withered to identify with certainty; 3, *Asplenium viviparum*; 4, *Pteris serrulata*. (M. E. H.).—We suspect the plant you describe is *Hemerocallis flava*. (E. Wyld).—*Stachys lanata*. (W. W. A.).—*Dendrobium Paxtoni*.

The Home Farm:

POULTRY, PIGEON, AND BEE CHRONICLE.

PEDIGREE IN CEREALS.

ALTHOUGH cereals of various kinds are now offered for sale at the seed times of wheat, barley, and oats, it is important to know how far distant the bulk offered was grown from the period of its last selection. It is not sufficient to call it pedigree corn, because if it has not been recently selected with the special object of keeping the sample without intermixture with ordinary corn it will be of no use, any more than it would be desirable to purchase what was once stock of full pedigree, but latterly crossed with stock without any pedigree at all; we must therefore impress upon the mind of the home farmer that in case he requires corn of the best varieties it should come direct from the person who selected it, and has continued to grow the grain with great care.

In introducing this subject to notice we cannot do better than refer to the originator of the system, Major Hallett, F.R.S., of Brighton, and in noticing the important points in connection with the subject we shall take occasion to quote from a paper upon the different points laid down and read by him at a local farmers' club about twelve years ago. He said in the course of his studies on the subject he had ascertained beyond all doubt the three following facts, upon which he founded his system of pedigree:—First, That no two grains of any cereal will produce plants precisely equal, and that therefore in any given quantity of any cereal—whether a dozen grains, a pint, or a quarter—there is one grain superior in producing power to any of the others. Second, That this superiority is inheritable. Third, That it may by repeated selection year after year of the best descendant grain be greatly increased, and become practically a fixed characteristic of the plant. He said, "Let me illustrate my first fact as to the different powers of grain, and to make the illustration the more striking they shall show the different powers of grains from the same ear, in producing quantity and weight per bushel, and in withstanding frost. In December, 1857, I planted the grains from two ears of wheat; together they contained 87 grains. I do not know the number in each ear, but certainly the smaller of the two did not contain less than 40. One of these grains produced a plant of ten ears, containing 688 grains. The finest ten ears that could be selected from the whole of the ears produced by all the other 86 grains contained 598 grains. This may be taken roughly as 700 against 600; yet assuming that this superior grain grew in the two smaller of the two ears, 39 of these 'other 86 grains' must have grown in the same ear with it. Had this plant been superior to any other of the plants it would have been remarkable; but when it is realised that all the ears, small and great, of this one plant so excelled the same number of ears, culling the best ear from the best of the other plants, the superiority in producing seven against six is positively extraordinary. A plant of barley grown in 1862 from a single grain consisted of fifty ears. The record against one of these, No. VIII., is—an extraordinary ear, all of whose grains are short, plump, thin-skinned, and beautiful, while there is a general tendency in all the other ears to produce elongated grains of not so good a colour and with thicker skins. Of these fifty ears the grains from each of the best ten were planted in a separate division, while the collected grains from all the remainder forty ears occupied an eleventh division. The grains of each division were again divided into two classes, making in all twenty-two divisions, and

a specimen ear and sample of the produce of each of these were arranged side by side, so that all could be seen at a glance. An eminent maltster could scarcely believe that all the samples came from one grain in the previous year, and at once selected as the best from Class I. grains of No. VIII. ear, the one which had shown such marked superiority the year before, the produce showing a superiority of nearly 8 lbs. weight per bushel in the produce of No. VIII. ear over that of all the other ears taken collectively. The result is that I have now pedigree barley weighing 57½ lbs. per bushel upon a farm said to be incapable of growing barley fit for malting, and on the neighbouring farms the barley grown is not fit for malting. In 1860 Colonel le Conteur of Jersey, who wrote a work on wheat which went through fourteen editions in different countries, sent me two ears of his famous Belle Vue Talavera wheat, begging me to cultivate and improve them under my pedigree system. This wheat had for years been sown as a spring wheat, and was declared to be quite incapable of withstanding the frost of winter. As an experiment, however, I picked out from one of the ears ten of its grains, and planted them on the 1st of November, 1861. Nine of the ten plants from the grains were killed by the severe frost, but the other plant remained as healthy and vigorous as any of the winter varieties of wheat by their side. From this surviving plant I have selected and grown it year after year as a winter wheat; the frost, even during the severe winter of 1868-4, has never affected it at all.

"I will now illustrate my second fact—the inheritability of the characteristics of good and bad grains. In the variety of wheat called 'Grace's White' there is a kind of indentation across the back of every grain, as if when soft a thread had been tied tightly round it. This mark is more or less distinct, but is never entirely absent. This is a bad quality for the miller, as these indentations are so much loss to him, although it makes but little difference to the farmer's measure. That disease is also hereditary was shown to me most clearly in the years 1862, 1863, and 1864 in the case of a red-chaffed white wheat from Messrs. Lawson, which in the garden in 1862 was covered with red rust, while all the other and surrounding varieties were perfectly free from it. In 1863 this was planted out on the farm and in the garden, and it was again covered with red rust, and it alone of all the varieties on farm and garden. Again, in 1864 precisely the same results ensued. Its growth was then abandoned. If the characteristics of grain are not inheritable, how can the different varieties of cereals be accounted for? This consideration alone is sufficient to render any further remarks unnecessary. Here it may be well briefly to refer to the question of 'sports,' although not within the limits of our customary variation, but rather as freaks of Nature, which are not inheritable."

In considering the first two points of Major Hallett's lecture, and leaving the third point until next week's continuation of the subject, we wish to call the attention of the home farmer to some practical deductions which may be made from the perusal of his statements, for it is not only shown in the most interesting and scientific method adopted by him as to the means of obtaining grain of established pedigree, but we find that up to the present time he has continued to offer his pedigree corn for seed, including wheat, oats, and barley at a reasonable price; therefore, without travelling over so many years to produce the same results as Major Hallett has done, the purchaser will have the opportunity of growing grain of full pedigree, and in full assurance of obtaining a produce of the sorts and quality advised, and in propagating from which the home farmer will have the satisfaction of obtaining advantages which he cannot with certainty obtain in any other way, and possess in the future produce, by taking due care and caution, the very best of grain wherewith to seed his land. It must also be borne in mind that whether he sells his crop or uses a portion of it for future seeding, he will be sure to obtain the best price for what is sold, and from what he sows the most probable advantage of the best crop, but still in accordance with the variations of the seasons. We have, however, much more to notice worth attention.

(To be continued.)

WORK ON THE HOME FARM.

Horse Labour.—The horses will still be employed alternately in preparing the land for roots, and in carting and stacking the hay. The land intended for Swedish turnips will by this time have been drilled and finished off even in the southern and eastern counties, but in the north and midlands and also in Scotland the root plants will be forward enough to allow of horse-hoeing between the rows. This must be attended to as the growth of weeds renders it necessary without regard to the size of the root plants, for the land must be kept clear of weeds under any circumstances. Sowing the hybrid varieties of turnips will now be going on, as this is just the period for sowing where a full crop is required. The different sorts of early turnips should now be sown, such as Grey Stone and Red Mammoth varieties, because these not only come in for early feeding sheep on the land or pulling for cattle, but will keep for the later feeding if not required early. This is a most important point, for if not fed off quickly many of the more delicate sorts will lose their quality if they do not actually

decay. Mangolds by this time will have been set out by the hand hoes to the distance required, except perhaps in those cases where the seed did not vegetate with regularity, and we find a great extent of this crop is very irregular, caused generally by the land being foul with couch. This rendered much work necessary in ploughing, &c., which made the land so dry that in many instances the seed only vegetated partially. Where this happens to be the case it is advisable to make out deficiencies by planting cabbages of a sort to meet requirements. If required for early use plant Imperials or early Oxheart, or if required only at the time of lifting the crop of mangolds the Champion Drumhead Cattle cabbage is the best. In either case we like to plant with the spade, as this allows the roots of the plant to enter the land deep where they find moisture; also in spade-planting the land is moved and falls back light and loose, which facilitates the rooting of all recently planted vegetables. In numerous cases where the field hay has been cleared off it will be found that the land is foul with couch grass, the result of previous untoward seasons. We therefore advise the home farmer to pay particular attention to this matter, and if the land is required for wheat in the autumn it should be immediately rafter or half-ploughed, and then scarified with Coleman's implement across the rafter with the points on, but not with the shares, as they cut and leave some grass behind, whereas the points comb it out and leave it to be dealt with by the harrows and roller on the surface. This will generally prove sufficient for any light land, and in the autumn without any further work the dung may be laid out, spread, and ploughed in, the presser following, and then sowing at the usual time according to the custom of the district. On strong land, however, the work may be continued after the first couching, and the land ploughed again before the manure is applied, as the heavy land cannot be made too loose before the final ploughing and seeding. Some horses will be required in working the mowing machine, tedding machine, &c., at intervals. The land intended for being laid down to permanent pasture must be advanced a stage by one more ploughing, harrowing, rolling, &c., especially if the land consists of strong loam or clay, so as to be ready to receive the grass seeds in the second week of the month of August.

Hand Labour.—This will in some cases be required in mowing the park and pasture lands for hay, especially in some cases where workmen are plentiful, in which case the mowing machine will only be partially employed. We find in some districts many labourers are out of employment, and the farmers to hold the men on until harvest or other employment occurs, have the grass cut with the scythe instead of the machine. The sheep on the grazing farms will now have been shorn of their wool, and if in forward condition should now be disposed of, for mutton is selling at a high price and will not pay for further expensive feeding with cake, &c. Upon the hill farms, however, the actual stock of the farm in ewes and ewe lambs must be held on and provided for, but the off-going ewes and wether lambs may be sold for stock at the early fairs, which commence the first and second week in July in certain districts. The price will depend very much upon the weather, for if the season continues as dry as it has been lately in some of the hill districts the breeders will be obliged to sell, and thus give the buyers an opportunity to lay in their stock at a moderate price. Every kind of horned cattle are selling very slowly in the fairs; the late bad seasons and the present scarcity of grass seriously interferes with the demand, the buyers will therefore have the advantage for a considerable time. Green fodder for all kinds of stock is exceedingly scarce, green fodder for horses the same. In those cases, however, where the clover was commenced cutting in the month of May, and where lucerne is grown a second cutting will soon be ready. In other cases where these are not available some of the park or pasture grasses, and especially low-lying or water meadows, may be reserved for late foddering, because in these pastures the young grass will continue to grow at the bottom, although some of the early stalks will be seeded; this is, however, of but little consequence, as it will still answer for horse fodder.

THE FARMING AND RAILROAD INTERESTS IN AMERICA.

UNDER the above title Messrs. Cassell, Petter & Galpin have issued a manual of seventy pages crowded with information of importance to agriculturists and capitalists; indeed to both producers and consumers of food in this country. The author, Mr. John Harold, collected the information during a sojourn of two months in the United States, and that he has spent his time diligently, and stated the results of his observations clearly and concisely, all will admit who peruse the pages under notice.

After quoting Mr. Caird's letter on the increase of acreage of grass and the decrease of farming stock in this country, the following significant figures are adduced:—"The number of cattle for 1878 show a slight increase of 118,000; of sheep a decline of 249,000; of pigs 392,000; or, as compared with 1874, a decline of cattle of 269,000, of sheep 2,168,000, and of pigs, 481,000. For 1879 the decadence, it is generally thought, will be more striking. And

here may be compared the live stock of the United Kingdom with those of the United States. They are—

	Cattle.	Sheep.	Pigs.
United Kingdom in 1878	5,866,000	28,187,000	2,091,000
United States "	33,280,000	38,000,000	24,780,000

"In this extraordinary fecundity of cattle in the States lie, I conceive, the true cause of the decadence of the home production. England cannot compete with the vast natural pasture grounds of America. In Chicago last year there were received over thirteen trunk roads, 1,265,782 head of live cattle, as against 178,000 in the Metropolitan market. And even in the cattle there was a decline in the last named from 1868, the numbers in that year being 192,480; of sheep 776,000, as against 1,521,000 in 1868; and of pigs 2870, as against 18,000 in 1868. The area of the grazing grounds outside of the States of Illinois, Wisconsin, Minnesota, Iowa, Michigan, Missouri, Kansas, &c. (all agricultural and cattle-breeding States), are fast becoming vast cattle fields. The territories of Colorado, Montana, Dakota, Nebraska, Wyoming, have a superficial area of 571,000 square miles, or 865,000,000 acres, being twelve times the size of England. These are the fields with which the British farmer will have to compete."

Referring to the transport of cattle in America a herd was "driven two hundred miles to a railroad station, then carried by rail to Chicago (1025 miles), and sold at a fraction under 1½d. per lb. One penny more, according to Mr. Caird, would put them free on Liverpool quay. That would be 2½d. per lb. on the hoof. Can the English farmer compete at the price? They were 'canned,' be it noted, for the English market." The "prices current" of cattle in the Chicago market in January of the present year will startle the majority of meat-buyers in England, the prices being for 100 lbs., and go far to explain the increase in the export trade as shown by the following official figures:—

"Among the items of increased export trade is that in live animals. The report of the Chief of the Bureau of Statistics shows that their exportation increased from \$6,844,658 value in the fiscal year 1877-8 to \$11,487,754 in 1878-9, and 71 per cent. of the total was in the latter year sent to Great Britain. The exports of cattle were \$8,896,818 in 1877-8, of which \$2,408,848 went to Great Britain, and \$8,879,200 in 1878-9, of which \$6,616,114, or 79 per cent. went to Great Britain. The report expresses confidence in a large and steady growth of this trade."

The grain-growing resources of America also have attention, and the increase of produce is contrasted with the decrease in Great Britain during the same period. The contrast is a violent one and the figures are astonishing. After quoting from Mr. Giffens' "Agricultural Returns" of this country that "the wheat crop in the United Kingdom has now decreased by nearly a million acres, or a fourth of its area since 1869, when 8,982,000 acres were under wheat. The decrease in Great Britain alone is from 8,688,000 acres, or 798,000 acres." The author says, "The increase in the production of wheat in America since 1869, when the planting in England began to decline, has been enormous, and rising from 260,000,000 to 448,000,000 of bushels, being the yield of 88,000,000 acres, or eleven times the wheat area of the United Kingdom. The average yield is about 14 bushels per acre. The yield in 1869 was 260,146,900 bushels, and in 1879 it was 448,750,000 bushels. The quantity of wheat exported from the States in 1869 was 18,000,000 bushels, in 1878 it was 74,000,000, and in 1879 124,000,000 bushels."

The figures relating to maize are remarkable, and the increase in the exports of wheat and flour is very striking, all the figures given being confirmed by an official report of the "Internal trade and commerce of the United States."

Sufficient has been added to show the nature of this admirably compiled pamphlet, and the great importance to all classes in this country of the subject to which it is devoted.

THE FANTAIL PIGEON.

FIRST among Toy fancy Pigeons seems naturally to come the Fantail. It is the Toy Pigeon *par excellence*. Who does not know what a Fantail is, though ignorant of the names of almost all other distinctive breeds? Few, too, there are who have not as children kept a few Fantails, often very bad ones from a fancier's point of view, yet none the less petted and delighted in. There is no breed more suited to confinement—indeed it is scarcely safe to let fine specimens loose, so easily from the incumbrance of their tails do they become a prey to cats and the sport of high winds. We scarcely know a harder kind; certainly there is none more quaint and attractive in its ways. Fantails as we now breed them in England are of two kinds, or rather of two styles—the English and the Scotch. The fancier may smile at this elementary piece of information, but we here write for novices and not for old hands who need no such instruction. This diversity of taste as to what a Fantail should be often leads to trouble and disappointment when not properly understood. This need not be, for the difference between the two styles is very comprehensible and easily described. The first point thought of in an English Fantail is its tail; the first in a Scotch bird its "carriage" as it is called—i.e.

the bearing of the bird, and the tremulous motion of the throat intimately connected with that bearing. Trouble arises in this way from this divergence of taste. Often a young fancier has a pair of birds from the loft of an admirer of one style; after a while a fresh bird is required to mate with some odd one; it is procured by chance from another loft, and turns out to be one of the older type. The inexperienced breeder is much disappointed and thinks it altogether a bad bird. We well remember a case in which a Scotch cock of very high carriage went from our own aviary to recruit a nondescript lot of Fantails, chiefly of English type. We were at once told, "He is such a foolish little bird, always twisting about and cutting antics when he ought to be eating or attending to his parental duties." This very "folly" would in the eyes of a connoisseur be a high merit.

For these reasons it is particularly necessary that the difference between the two styles should be carefully explained. The young fancier can then choose for himself which he prefers, or if sufficiently enthusiastic in the matter he can in time try to produce a strain combining to some extent the beauties of them both. This has been successfully done by some experienced hands, but can only be attempted by such. We will begin with the English Fantail. Tail, as we have said, is its first point, and this must be both large and flat. The pure English Fantail is rather a large Pigeon, and the tail feathers of a good specimen are very broad and long. They must be evenly arranged, not in bunches here and gaping there, but each fitting nicely over the edge of the next, and not set sideways. One of the greatest points in the shape of the tail is that the side feathers should come well down, and so that it should form as nearly as possible a perfect circle, looking from behind like a saucer set upright. One of the greatest and commonest faults in the shape of the tail is a gap in the centre, or at least some misformed feathers there. Such a blemish is sure to be hereditary, and birds with it should be rejected if it is desired to breed a really handsome strain.

Such should be the shape of tail. Its carriage is of equal importance. In a perfect English Fantail it is carried perpendicularly, neither inclining backwards nor forwards. Of course perfection in this point, as in most of others, is very difficult of attainment; but on the one hand we much dislike to see a tail tilted over the back, the whole balance of the bird is then spoiled, and often the head actually comes through the tail and is seen behind it. On the other hand, a well-balanced bird may carry its tail so far back that it looks simply like a funnel: this is the most common fault, and not to be tolerated in a strain with pretension to an exhibition standard. As to the number of principal tail feathers, this point matters little so long as the tail is well shaped and well carried. There are generally from twenty-eight to thirty-six in the best birds, at times forty, but when they are so numerous they are apt to lie in bunches. There is a difference in the quality of feathers; some are much stronger than others and less fragile. This, of course, is an advantage, for they then keep their beauty and do not become ragged as those of most Fantails do. We find the English type of birds best in this respect, probably because it has not been weakened by interbreeding to produce smallness of size. Much may be done to keep tails in good order by having all nests large and open, and removing everything against which the birds are likely to break and fray them. A little smoothing upwards with the fingers dipped in cold water will help to put a Fantail's tail in order.

The head of a Fantail should be small, but it is impossible to find English birds so elegant in this respect as Scotch birds; the neck should be well arched with head thrown back over it, so as just or almost to touch the tail. The balance of the bird and its whole carriage is then good. A tremulous motion in the throat completes its contour and adds much to its beauty, though this is seldom seen to any great extent in English birds. The back should be very short, in fact it should scarcely be seen, and anything approaching to a saddle is a fault. Formerly a breed, we fancy of Indian extraction, were in vogue with longer backs, and it was a joke amongst French fanciers that an English Fantail required a saddle to ride it. Such a bird as we have described when playing and in high spirits will have a proud and mincing gait, and go on tiptoe. We will attempt in another article to describe the Scotch type, and to give some general hints on breeding Fantails.—C.

MILK FOR CHICKENS.

I SEE your excellent correspondent "C.," to whom all amateur poultry fanciers are so much indebted for weekly information of the most reliable, seasonable, and practical kind, mentions milk as a good fattening agent for young chickens, at page 448, and states that his birds are supplied with this in little pans. This plan we have found to answer very well when the chickens are shut up in a confined run where they are obliged to drink what is put before them; but where chickens are allowed to run over acres of ground, as they are with us and many others, the milk may stand in the pans all day without one of them hardly ever touching it, as they go and drink out of any water hole, ditch, or stream most convenient. Besides, in hot weather milk cannot be

kept long in the pans until it becomes tainted, and then it is the worst drunk chickens could take. To avoid this and be sure that the chickens do get the benefit of the milk, we mix up the first feed of meal we give every morning with milk in the place of water. This they take with a relish and thrive well on it, as in my opinion milk is good for young chickens, no matter what purpose they may be reared for.—J. MUIR.

VARIETIES.

POTATOES IN LINCOLNSHIRE.—A large and successful grower informs us that he never saw the Potato fields in finer condition than they are at present. The season was favourable for planting, and has since been equally propitious for the growth of the plants, which is clean, healthy, and regular—there being no patches and discoloration that were so frequent during the corresponding period of last year. The Magnum Bonum and Scotch Champion varieties have been largely planted, but it is very clear by the marked dissimilarity in the haulm that there are large breadths of a spurious variety of the former, which, we are informed, originally came from the Continent. The tubers of both are the same in appearance; but there is a great difference in their quality, and the foliage of the continental form is more acute than that of the true English Magnum Bonum. Of old Potatoes now sold in the local markets, the Scotch Champion we are told is the best and is realising the highest price.

POULTRY AT WORCESTER.—We learn that the Sultan cock that secured the first prize at the Bath and West of England Society's Show belongs to our excellent correspondent Mr. J. Muir, The Gardens, Margam Park, Glamorganshire. The Sultan is one of the best birds of his kind. He was first at Swindon, at Newport, and Cardiff, and has won prizes at several other places. Mr. Muir has about one hundred fowls all show birds, and has made a good beginning as a poultry fancier, for since he commenced exhibiting last autumn has obtained thirteen prize cards for Sultans and Scotch Greys, of which he has fine stocks.

BRITISH BEE-KEEPERS' ASSOCIATION.—At the last Committee meeting of this Association, present, Mr. Cowan in the chair, Rev. E. Bartrum, Messrs. Abbott, Cheshire, Glennie, Hooker, Hunter, and Jackson, and Rev. H. R. Peel, Hon. Sec. After the usual routine business had been transacted, the "Handbook for Cottagers" was read. The work was subsequently referred to a Sub-Committee consisting of Messrs. Cheshire, Cowan, and Hooker, who were requested to present it in slip at the next meeting. The diagrams were reported as approaching completion. Mr. Jackson presented a queen from Cyprus to the Association.

THE METEOROLOGICAL SOCIETY.—The last ordinary meeting of this Society for the present season was held on Wednesday the 16th inst. at the Institution of Civil Engineers, Mr. G. J. Symons, F.R.S., President, in the chair. Amongst the papers read was one on "Ozone in Nature, its Relations, Sources, and Influences, &c., from fifteen years' observations ashore and afloat under all conditions of climate," by J. Mulvany, M.D., R.N. The meteorological elements with which ozone is most intimately associated are such as occasion high vapour tension and a high degree of saturation; therefore it is promoted by wind passing over a large aqueous expanse and by heat, producing rapid evaporation. Hence heat if humid is no bar to atmospheric ozonisation, but no definite relation exists in the atmosphere between heat *per se* and ozone. Its relation to humidity is more definite and direct, but subject to many exceptions. In consequence of this relation it most abunds where its chemical qualities render it most useful. It appears to be formed in the upper strata, and to be carried downwards by raindrops, whose office is vehicular. The spherules of water which constitute clouds, and have their origin in radiation and condensation, have a similar office. Ozone does not appear to diffuse readily downwards, so that when the lower strata are robbed of ozone by jungle, &c., a considerable difference in the ozonic condition close to and at 170 feet above the surface may exist. The author is of opinion that no disease can be clearly traced to ozone as met with in the atmosphere.

ARTIFICIAL COMB FOUNDATIONS.

LAST year I bought 10 lbs. of these for supering purposes, which, owing to the rainy season, were not needed or tried at all. They have been carefully preserved, and last week some pieces of them were put into a shallow box with a glass window, which was placed on top of a hive nearly ready for swarming. The pieces were placed in the bottom of the box, so that the bees would enter at once to commence work. They did so, in a few minutes fastened the guide combs to the bottom and began to build on them and upwards. "Well," said I, "here is evidence of the value of artificial comb foundations." The bees kept at their work, and the combs gradually rose till their tops nearly reached their lids, when they began to bend and fall over against one another. They bent most in the centre of the super, where the heat was greatest. Some of the pieces, after the cells had been elongated and partially filled with honey, bent into a horizontal

position. An attempt was made to raise and straighten them. It was a failure; they would and did curve, bend, and sag. Evidently the artificial foundations used here are either in make or materials defective. Possibly they may answer if used in narrow strips or very small pieces. Natural comb used in an artificial way never yields like them, however large the pieces may be that are used in supering. Of course there is great difficulty in getting natural white comb enough in an apiary of extensive supering. It is to be hoped that Mr. Cheshire or some other ingenious apiarian will yet invent a way of strengthening artificial comb foundations without using fibre of any kind, for the use of fibre must necessarily be a work of toil and trouble to both bees and bee-masters, and the laceration of combs in removing threads from them is unavoidable. Something else better than threads will yet be sought. We now put this question: What makes the artificial comb foundations bend, sag, and topple over by their own weight? If they are made of pure wax, and made with thicker walls than natural combs, why do they fall out of position without being propped? This question is put for others to answer, and as it is important I hope some of our clever men will give it full consideration. If artificial comb foundations can be made to stand like natural comb they will be extensively used, and found of great service in an apiary. The hive on which my super was placed was near the swarming point at the time of supering. To prevent the loss of a swarm I cut a wing from the queen of the hive. The bees swarmed, and the queen on falling over the flight board was picked up and put under a glass. The swarm alighted on an apple tree, and returned to the hive in about fifteen minutes. The queen was given to the hive; in about two hours it swarmed again. This time the swarm was hived, and received the queen, which fell a second time over the flight board. The super was removed from the stock hive, and so things remain.—A. PETTIGREW.

OUR LETTER BOX.

DORKINGS DISEASED (C. B.).—All the fowls wasting away should be separated from the others. They should be treated with a copious dose (at least a tablespoonful) of castor oil, then fed on bread and ale, bread and milk, and have no drink but camphor julep. Separate them entirely from the hens and pullets. Give them mutton and meat scraps chopped fine.

EXAMINING HIVES (S. W.).—It is not injurious to examine your bees occasionally, or even frequently, if proper times be chosen. If the thermometer stands above 50° in the shade bees will not be chilled. During rain and wind of course all disturbance which would expose the busy throng must be avoided. While supers are over the hive never needlessly interrupt the work, the advantage of which is to be your own.

FOUL BROOD (S. W.).—The whole question of foul brood was exhaustively treated by Mr. Cheshire in our issues of June 26th, October 2nd, and October 9th, 1879, and to these we must refer you, only adding that foul brood is caused by the growth of a fungus in the body of the bee larva; by which they are killed and reduced to putrescence, after which they become centres for spreading the malady. Salicylic acid is the best known remedy, and that this can be applied in solution or in a condition of vapour.

METEOROLOGICAL OBSERVATIONS.

CAMDEN SQUARE, LONDON.

Lat. 51° 32' 40" N.; Long. 0° 8' 0" W.; Altitude, 111 feet.

DATE.	9 A.M.				IN THE DAY.					
	Baromet. at 32° alt. level.	Hygromete- ter.		Direction of Wind.	Temp. at 50° f. at 1 foot.	Shade Tem- perature.		Radiation Temperature.		Rain.
		Dry.	Wet.			Max.	Min.	In sun.	On grass.	
1880.										
June.										
Sun. 13	30.021	63.1	55.4	N.W.	55.2	74.4	48.4	128.7	40.2	—
Mo. 14	30.043	61.0	57.4	N.N.W.	56.4	74.4	50.0	111.5	45.6	0.386
Tu. 15	30.075	53.1	52.7	N.N.W.	56.6	63.6	52.3	68.0	49.9	0.290
We. 16	29.900	55.7	55.3	N.	55.4	63.3	52.5	84.3	52.5	0.112
Th. 17	30.131	63.2	59.7	N.	55.8	69.8	52.8	119.9	48.0	—
Fri. 18	30.000	62.3	60.3	N.	56.8	77.0	52.5	158.2	47.2	0.105
Sat. 19	29.722	59.5	58.1	N.E.	58.2	73.5	55.1	123.5	52.7	0.165
Means.	29.985	60.7	57.0		56.3	70.6	51.7	106.9	48.1	1.063

REMARKS.

13th.—Very bright, warm, calm day.
14th.—Dull, hazy morning, heavy shower from 2.33 to 3.3 P.M.; two-tenths of an inch of rain fell in ten minutes; rain again in evening.
15th.—Dull, cool, sunless day; rain from 4.30 P.M. and in evening.
16th.—Dull and cloudy throughout with some rain, fair between noon and 3 P.M., rainy afterwards.
17th.—Very close and dull with slight rain before noon, latter part of the day much finer.
18th.—Fine, bright, sunny day.
19th.—Fine very early, afterwards close and damp with some rain; very fine and bright after 2 P.M.
Much warmer week, temperature near the average and rainfall above it.—G. J. SYMONS.

COVENT GARDEN MARKET.—JUNE 23.

OUR market is well supplied with all classes of fruits and vegetables, the latter being with difficulty cleared. Strawberries are now reaching us in large supplies, and prices are considerably reduced. Business quiet.

91.

